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Philadelphia Paper Trade Outlook Brightens

Inquiries for Future Account Are Gradually Becoming More Numerous — Some Consumers, Out of Market for Months, Are Now Placing Orders — Distributors Find Demand for Near Future Deliveries Growing—Warehouse Stocks Are Improving Slightly, Although Many Dealers Are Fairly Well Supplied With Hold Overs

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., September 5, 1932.—With a more hopeful outlook for broader buying of paper generally among mills and dealers, the trade, locally, is looking ahead to brighter days with the passing of the vacation period. There are many inquiries coming into mills for various papers manufactured within the Metropolitan area indicating that buyers are shopping around before placing orders, and it is from these sources that manufacturers hope to receive results. Distributors, too, find inquiries for deliveries in the near future growing and actual orders are being placed by customers who have not been buyers for months. Stocking among distributors shows slight improvement although many dealers are fairly well supplied with hold over goods from the Spring. Converters report a fairly good demand for such commodities as bags, Cellophane products, boxes and containers, the latter being particularly in demand among clothing manufacturers and milliners. Prices of bags are much disturbed after several months of stabilization. Following a cut in the price of kraft last month, another reduction was the price of Southern made products last week with quotations down at ¼ cents per pound, making the valuation the lowest in the history of the industry, in so far as Philadelphia is concerned.

Graphic Arts Advertising

With the fifth piece of direct mail advertising matter promoting the sale of paper, printing and other allied products among consumers in the campaign sponsored by the Graphic Arts Group of the Quaker City, sent out last week, there has been effective sales work accomplished in the movement to stimulate interest among large users of such matter. A comprehensive piece of direct mail appeal was in "The Seven Check-Points" showing how consumers would avoid waste and effect savings in costs of mailing by envelope enclosures, folders, brochures, booklets, catalogue folders with return cards, post cards, package inserts, illustrated letters and broadsides in an attractively got up booklet, while last week there was sent a personal message from the group in a demonstration of use of four-page letters as a form of direct mail advertising. The Paper Trade Association Committee is uniting with the Typothetae in the direct mail campaign for broader patronage of the Graphic Arts.

Chester Spaulding to Address Merchants

With the session of the wrapping paper dealers and jobbers called by the special committee and group of prominent distributors in the Philadelphia territory, to be held on September 7 at the Typothetae headquarters, at noon, there will be taken a forward step in the co-operative movement of the associates in the wrapping paper division of the local industry in the formation of an organization devoted to this branch of the trade. The meeting has been called with a view to promoting a co-operative body for the welfare of the industry and associates engaged in the distribution and jobbing of wrapping papers and like specialties. Chester A. Spaulding, of the National Paper Trade Association, will be present and will be the guest speaker of the program. Plans and means for organization of the wrapping paper dealers will be expounded and steps taken in the formation of an association. The committee of Quaker City wrapping paper dealers who are leaders in the movement are T. H. B. Smythe, J. L. N. Smythe Company; Nathan D. Isen, Enterprise Paper Company; Frank A. O'Neill, Paper Manufacturers Company; Edward A. Keller, Garrett-Buchanan Company W. B. Killhour, Quaker City Paper Company Simon Walter, S. Walter, Inc.; and George W. Ward, D. L. Ward Company.

Paper Dealers Discuss Sales Tax

With attendance of all paper dealers in the Philadelphia trade at the combined meeting of the Typothetae and Paper Trade Association, there was a discussion of the sales tax which is to be imposed by the State of Pennsylvania as a means of acquiring funds to finance the budget for providing relief to the unemployed adopted at the special session of the Legislature held last month. T. H. B. Smythe, of the J. L. N. Smythe Company, was the speaker for the paper trade.

J. H. Wantling Joins Brown Paper Mill Co.

Justin H. Wantling, familiarly known as "Just," who for the past six years has represented the Continental Paper

(Continued on page 18)

News Print Situation Involved In Canada

While Beatty Committee Has Made Substantial Headway Collating Facts and Figures On Operations, Physical Assets, Etc., No Concrete Plan of Amalgamation Has Been Drawn Up—Operations Averaging Less Than 50 Per Cent of Capacity

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., September 5, 1932.—While some of the news print companies have been able to maintain their positions in a satisfactory manner, considering all that has transpired, the industry, as far as Central and Eastern Canada is concerned is still in an unsatisfactory condition. Three of the chief operators have admitted their inability to carry on and the remainder, while keeping their heads above water, are probably as much in need of reorganization as the others. The three operators whose position is now being studied by the bondholders are Price Bros. & Co.; Abitibi Power and Paper Company and Lake St. John Power and Paper Company. The only remaining news print operators in the Eastern Canadian field which are not now confronted with possible reorganization or foreclosure proceedings are Consolidated Paper, McLaren Power and Paper, Ontario Paper Company and Canadian International Paper. The first named company has already gone through a process of reorganization, while Ontario Paper and Spruce Falls are not generally regarded as public operators, their output being marketed with papers controlled by their owners. Developments in connection with Lake St. John, Abitibi and Price Bros. all have a bearing on the bankers' plans for a merger of the leading Canadian operators. It has always been understood that the companies under consideration in the proposed amalgamation included the three mentioned above, Consolidated Paper, McLaren Power and Paper, and the Canadian and Newfoundland properties of Canadian International Paper. Recently there has been no announcement of the progress made by the so-called Beatty Committee on the merger plans. It is known that the committee has made substantial headway collating facts and figures on operations, physical assets, etc., but no concrete plan of amalgamation has been drawn up.

Co-operation Lacking in Industry

In the past the difficulty of getting any co-operative action among the manufacturers has been due to the differences of opinion existing between the controlling interests. With the bondholders in control of some of the properties and the banks in a dominate position respecting policies of a number of others, it is expected that when the merger plans are again tabled, considerably more progress will be made than has been the case in the past. Meanwhile the operating position of the Canadian news print industry cannot be said to be satisfactory, with the capacity of the plants far in excess of requirements for the next half dozen years. Operations of late have been averaging less than 50 per cent of capacity. July figures on production and shipments, while representing a seasonal decline, did not hold out any hope for any marked upward movement in the near future. Judging by results for the first seven months of the year and prospects for the balance of the year, production and shipments for 1932 are likely to be about the same, or probably even a little less, than those reported for 1927.

It is more or less freely admitted by operating heads of the industry and outside observers that for some time to come news print operators must be content with a much smaller volume of business than that which prevailed in 1929. It is not thought likely that the present lag between supply and demand will be taken up before 1940. This date is based on a maximum normal increase in demand. Other authorities have even gone so far as to say that consumption will not reach the present maximum capacity of output until 1945. Developments may occur, of course, which would put this estimate at naught. At the same time, however, it would appear as if the fact had to be faced that the Canadian news print industry cannot expect to be operating at 80 or 90 per cent of capacity for several years under normal circumstances.

Company to Safeguard Forests

Frank J. D. Barnjum, forest conservationist, has formed under the laws of Nova Scotia a holding company for his extensive timberland properties in Nova Scotia. It is estimated that Mr. Barnjum's holdings approximate 100,000 acres, chiefly situated in Annapolis, Queen's, Guysboro and Victoria Counties. The company is known as the Barnjum Forest Foundation of Nova Scotia and its holdings in the form of vast acreages of valuable pulp and timberland will be perpetually insured against exploitation. The foundation is a closed corporation with Mr. Barnjum as president; George W. Barnjum, his son, as vice-president and a director; Lenora B. Wood, his daughter, also a director. It is incorporated at $5,000.

Notes and Jottings of the Trade

A. P. Costigane, secretary-engineer of the Ontario Pulp and Paper Makers' Safety Association, has returned to Toronto after a visit to the Sturgeon Falls, Espanola and the Sault St. Marie mills of the Abitibi Power and Paper Company. Mr. Costigane expressed himself as very optimistic as far as accident prevention and compensation in the mills for the current year are concerned.

E. M. Hurd, vice-president and general manager of the Westminster Paper Company, Ltd., New Westminster, B. C., was in Winnipeg recently on business connected with the expansion of their activities in the prairie provinces, and the establishment of a direct sales office in Winnipeg under the management of Cliff Radcliffe. The Westminster mill manufactures bathroom tissues, paper napkins and towels, wrapping papers and many other paper products. The sales of its products extend from the Atlantic to the Pacific Coast, as well as Australia, New Zealand and the West Indies. Mr. Hurd was formerly connected with the Interlake Tissues Mills at Merritton, Ont.

Several of the paper houses had interesting exhibits at the Canadian National Exhibition in Toronto in September. The Rolland Paper Company, Ltd., had a booth in the industrial building in which were displayed specimens of the materials used in the manufacture of fine papers, illustrations of the methods of manufacture and samples of the finished product. The Interlake Tissue Mills had an artistically decorated booth showing the uses of fancy tissue papers and the Dennison Manufacturing Company showed various lines of paper novelties. W. J. Gage & Co. had an excellent display of their Holland Linen lines in the form of papeteries.

W. A. Woodroofe, in charge of the flour sack department of Alliance Paper Mills, has returned to Toronto after a vacation spent in Muskoka.

Sentiment Improving In Chicago Paper Market

Paper Mill Representatives Express Greater Optimism With Approach of Autumn—Sulphite Bond Situation Continues to Show Betterment—Fine Paper Section Remains Quiet and Spotty—Kraft Wrapping Paper Situation Unsatisfactory

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., September 3, 1932—With the quiet summer months a thing of the past paper representatives in Chicago and vicinity are not averse to letting it be known that they expect better times to come. The summer months have been dubbed "recovery months" and the market here feels that much has been done of a curative nature to clean house for fall efforts. In the markets themselves hopefulness exists as to continued improvement in the sulphite bond market and Chicago jobbers are to be commended for the spirit they are showing in adding to the strengthening of what has been a somewhat uncertain factor. Events within the next few weeks are expected to further strengthen the sulphite bond situation.

Kraft representatives here are not so hopeful as the kraft market passes through another somewhat hectic week. Continued reports of heavy stocks overhanging the market are current and the price structure reported shaky. Fine grades of paper had a quiet and spotty week of it if current reports here are to be fully credited. Books and covers remained little changed. News print markets were slow but heavier demand, a forerunner of what is hoped will be real improvement, is noted from certain sources. Ground woods are dull with mills still following a policy of watching the production curve very closely. The waste paper markets are still very quiet.

Labor Problems to be Discussed

Labor problems, accentuated by the depression and evolving around shorter working hours, are expected to be among the important topics discussed at the coming meeting of the Paperboard Industries Association to be held in Chicago at the Congress Hotel, September 20, 21 and 22. It is expected that members of the association will do all they can do to improve the labor situation—individually and collectively.

Many feel that a division of the work available should not lead to much, if any, inefficiency. The association has a splendid record in its relations with labor and it will probably recommend labor readjustments rather than go backwards in its treatment of labor.

The remainder of the program will follow closely the lines of previous meetings. Executive and committee conferences will be held on the first day of the three day session, while meetings of the Container, Paperboard and Folding Box groups will be held during the second and third days with the joint conference scheduled for the final event. The Container Group Executives conference, now an accepted and important part of the regular association meetings, will also be a major event on the program being arranged by H. S. Adler, secretary, and the executives of the association.

News Print Freight Rates

Chicago paper merchants, and news print representatives in particular, are very much interested in the recently proposed report issued by J. H. Howell, examiner in the general news print investigation for the Interstate Commerce Commission. Reports here indicate that news print paper users will pay higher freight rates if Mr. Howell's recommendations are accepted. The railroads have proposed changes in freight rates, covering rates on news print paper from producing and shipping points in the eastern part of the country, Wisconsin, Michigan, Minnesota and Canada, to points in the eastern and southern sections of the country and to points in Illinois, Lake Michigan ports in Wisconsin and Mississippi river crossings. Establishment of rates on news print paper originating in Canada, applying from the Canadian border line to the destination points in the United States, was recommended by the examiner. He said the carriers should propose the particular rates as he could not, from the record. Shippers and receivers of news print are already objecting strenuously to the examiners' recommendation and are expected to have a strong brief ready when the argument comes before the commission in the Fall.

Salesmen to Hold Final Golf Event

The Big Day for the Middle West Division of the Salesmen's Association of the Paper Industry comes on September 16, when the final golf event of the year gets under way at the Olympia Fields Country Club. According to Courtney Reeves, chairman, members and guests are already showing signs of making the event a record breaker from an attendance standpoint. Those who expect to attend are being urged to make their reservations with Mr. Reeves at an early date. A long list of prizes for the many par shooters has been announced with plenty of opportunity for prize-copping being offered to duffers and experts alike. In addition the salesmen who have been sharpening their game each month all during the summer, will be going after the President's trophy, the Harbison trophy, the prize donated by the *American Paper Merchant* and, of course, the honor of defeating the New York Division. Lunch, golf and dinner with an interesting program is on the cards for the wind-up event.

News of the Trade

The Chicago Paper Association will assume its bimonthly program on September 13 when the first Fall meeting will be held and members will begin talking about an election again in October. The association has been holding one meeting a month during the summer season.

Norman L. Dunnom, for the last ten years with the Walton & Spencer Company, Chicago, has been appointed sales manager of the lithographic division of the Milprint Products Corporation, Milwaukee. Mr. Dunnom will make his headquarters at the Chicago office.

M. A. McNulty and his brother W. P. McNulty, both of the McNulty Paper Company, Chicago, took a motor jaunt on August 28 and 29, pointing an open touring car towards Fort Dodge, Iowa, by way of Galena, one of the highest points in Illinois. While traveling over this highest point, the McNultys were caught in the most severe rainstorm of the season, in an open touring car to boot! Their many acquaintances in the paper industry will be glad to know that they were able to thoroughly and effectively dry themselves out a bit later on at the Julien Dubuque Hotel, in Dubuque, Iowa.

Package Paper Co. Busy

HOLYOKE, Mass., September 6, 1932.—The Package Paper Company, manufacturers of cellophane specialties, has had the best month in August since it was established here in 1930. A sharp increase in demand for this product has forced the concern to work overtime.

Kraft Paper Specialties Popular In Canada

Making of Kraft Paper Bag as Container for Cement Has Proved One of Most Successful Innovations—Has Superseded Jute Bag Formerly Used by Cement Companies—Experiments Now Being Made In Utilization of Kraft Paper for Flour Containers

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., September 5, 1932.—Various paper companies here are giving a good deal of consideration to the development of side lines and of new uses for their products. One of the most successful innovations in this direction has been the making of a kraft paper bag as a container for cement. This bag is not only so cheap that it does away with the old bugbear of return of "empties," but it is actually much superior to the old jute bags, as it prevents cement escaping in powder form and is practically waterproof. Moreover it is so strong that it will withstand not only ordinary usage, but a surprising amount of rough handling. This paper bag has now entirely superseded the jute bag formerly used by cement companies.

Following the success achieved in this direction experiments are now being made in the utilization of kraft paper for flour containers. This involves much difficulty, but success appears to be in sight. Still other experiments are being directed to the production of a kraft paper container for sugar, to be used inside the jute bags used by sugar refiners. Experiments in this direction have not gone far enough to warrant any definite statement.

Cellophane's Extending Uses

Much attention has been attracted to the immediate success attending the production of Cellophane in Canada. The new plant established at Shawinigan Falls by Canadian Industries, Ltd., has not only been working at capacity since it came into operation, but another unit is being added to cope with orders present and prospective. The use of Cellophane is being applied to innumerable purposes already, and prospective new uses are continually cropping up. For instance, a Cellophane cover for fruit baskets has just been developed. In the past fruit in baskets has been protected by a cover of netting, which, though serving the purpose, has not protected the contents from dust. Cellophane serves the purpose of exposing the fruit to the view of the purchaser and at the same time protecting it from dust. The movement of fruit in Canada is large, and a wide new field for the use of Cellophane is thus being opened up.

There are those who believe that Cellophane, in modified forms, will also come to be manufactured for uses entirely different from those for which it was evolved. An extraordinary feature of Cellophane is that while in the single sheet it can be torn quite easily, yet when doubled it is well-nigh untearable, and when twisted it forms a strand of amazing strength.

Lake St. John's Future

The National Trust Company, of Montreal, as trustees of the bondholders of the Lake St. John Power and Paper Company, will shortly make arrangements for a special meeting to consider conditions arising out of the failure of the company to meet its bond interest due on August 1. Two steps are open to the committee—first, to allow the operations to continue as they are, with some adjustments as to payment of the sinking fund and bond interest; the other, which would naturally come up for consideration in any case, is to work out some form of capital reorganization. From the outset the major portion of the output of the company, which is one of the main units of the St. Lawrence Corporation, has gone to the Hearst publications. Naturally the demand for these publications has declined with the reduction of advertising and circulation that has been the decisive factor in the decline of production and sales of news print all over the world.

Price Bros.' & Co.'s Reorganization

While Lord Beaverbrook has withdrawn from the picture, consequent upon the non-acceptance of his plan for re-organization of Price Bros. & Co., there is a general feeling that he will be an important factor in the reorganization, nevertheless. Not only is he understood to own some 60,000 of the common shares of the company, but he has purchased nearly one-quarter of the company's news print output, and is in a position to increase his purchases to nearly one-half of the total output. At present the affairs of the company are being studied by a Protective Committee of the bond holders, and it is believed Lord Beaverbrook will have a very definite say as to what plan is put forward for the protection of creditors and bond holders.

Re-opening of Nashwaak Mill

It is estimated that the Nashwaak pulp plant at Saint John, N. B., will be ready to operate the first of October, producing high grade bleached sulphite, for which the market is almost totally in the United States, with prospects of entry into the British market.

H. C. Atkinson, manager of the Port Royal Pulp and Paper Company, which recently acquired the Nashwaak plant, after it had been shut down for two years, states that company hopes to eventually reach a production mark of 125 tons per month as compared to a previous high total by the old company of 85 tons. At present, in the process of getting the plant ready for reopening, there are 70 men employed with a payroll of $1,000 a week, the estimated cost of reconditioning being $35,000.

Asked as to why the company located at Saint John, Mr. Atkinson said the site is the best possible one with limestone and wood right at the door and the New England markets right around the corner. Pulp will be obtained from up river points and chips will be brought from the company's mill at Van Buren, Maine. The first shipment of Louisiana sulphur is to arrive this month.

United Container Association to Meet

The regular bi-monthly meeting of the United Container Association will be held at the Congress Hotel, Chicago, Ill., on Tuesday and Wednesday, September 20 and 21. Committee meetings will be held on Tuesday, September 20, and the regular association luncheon and business session on Wednesday, September 21.

Papers will be read by Samuel Katz, president of the Gibraltar Corrugated Paper Company, Inc. on "Cutting Container Costs," and Edwin A. Russell, sales manager of the Philadelphia Quartz Company on "The Right Use of Silicate in a Box Ship."

Manufacturers Box Co. Increases Production

General Manager D. R. Leppler Reports Steps Taken Following Wake of Greatly Expanding Shoe Output Activities—Thilmany Pulp & Paper Co. Holds Safety Meeting at Kaukauna —Proposed New Freight Rates On News Print Protested

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., Sept. 6, 1932.—Production has been stepped up almost to normal output by the Manufacturers Box Company, Milwaukee, Wis., a large manufacturer of all kinds of boxes for the shoe trade. The company is controlled by a group of shoe manufacturers.

Weekly working schedules average forty hours, instead of the thirty hour schedule in effect a few weeks ago, according to D. R. Leppler, general manager. The firm now employes sixty persons, but has not added many workers to take care of the increased demand, because it is more a case of stepping up the machines. The increase in business follows in the wake of greatly increased shoe production activity.

Public Safety Rally Staged

Thilmany Pulp and Paper Company, Kaukauna, Wis., staged a public safety rally last week in co-operation with the Employers Mutual Liability Insurance Company. Two meetings were held in the high school auditorium, one in the afternoon and one in the evening, so workers on all shifts could attend. Clarence F. Otto, safety leader of the insurance company, gave the principal talk. A motion picture, "Ask Daddy," obtained from the National Safety Council, was also shown. Musical entertainment was furnished. The Thilmany Company has made it a practice to hold these rallies annually.

Revised Freight Rates Postponed

Because of shippers' protests and errors in published tariffs, a general revision of freight rates on Wisconsin and Michigan paper and paper products, once postponed, did not become effective Sept. 1 as scheduled. The schedules will be revised and postponed again this time until October 15.

First scheduled to become effective on August 1, the new rates, mostly reductions, drew many protests. The interested railroads voluntarily postponed the effective date for a month. Now, through their agents, the roads state that they are actively considering and changing the rates and ask the Interstate Commerce Commission to let them withdraw those slated for September 1.

Work of Forest Service

The United States Forest Service purchased 50,978 acres of Northern Wisconsin land to add to its forest units, a report covering the fiscal year ending June 30 and issued by E. W. Tinker, Milwaukee, Wis., regional federal forester, reveals.

Flambeau unit was increased to a total of 76,385 acres by the addition of 39,458 acres. The Oneida unit was increased by 6,359 acres to a total of 46,383, and, 5,162 acres were added to the Moquah unit to bring the total to 43,209.

Approval has been given by the forestry service to purchase of 30,000 acres for the Flambeau unit, 35,000 acres for the Moquah unit, and 7,000 acres for the Oneida unit but the purchase has not been closed.

Most of the land purchased during the fiscal year was tax delinquent and cost the government $81,259.

New Sub-Ranger Station Planned

A building site for a sub-ranger station located on the Wisconsin river at the Highway 13 bridge has been made available by the Nekoosa-Edwards Paper Company, Fort Edwards, Wis., and is to be at the disposal of the Wisconsin Conservation Commission for fifteen years. A building will be erected there soon, in proximity to the reforestation operations carried on by the paper company. Arrangements were made by John E. Alexander, vice-president and general manager of the Nekoosa-Edwards company, who is also a member of the advisory council of the state conservation department.

Formal dedication of the J. A. Kimberly Memorial Library, erected this summer in connection with the Institute of Paper Chemistry at Lawrence College, Appleton, Wis., is tentatively set for September 23. The interior of the building is being completed preparatory to its use by students when the fall term opens. The program is being arranged by Dr. Henry Merritt Wriston, president of the college and director of the Institute. J. C. Kimberly, president of the Neenah Paper Company, Neenah, Wis., is expected to have a prominent place in the exercises because of his donation of $100,000 towards the building, to be a memorial to his father, the late J. A. Kimberly, one of the founders of the Kimberly-Clark Corporation.

Mill Pay Roll Taken By Robbers

HOLYOKE, Mass., September 6, 1932.—Kenneth R. Graves, paymaster for the Hampshire Paper Company, and Carew Manufacturing Company of South Hadley Falls was held up at the point of a gun, as well as the driver of the taxicab in which he was conveying the payrolls of both companies amounting to $4,500 last Friday, the monies taken in the two bags in which they were placed and Graves and the driver forced to go down an embankment while the robbers drove away. No trace of them has been found.

The robbery was the boldest ever taken place in Holyoke. Paymaster Graves first drove to the Dwight street branch of the Hadley Falls Trust Company; thence to the Holyoke National bank, High and Dwight streets. As he came out two young men who had been loitering in front of the building, stepped forward and as Graves got into the taxicab, one followed and pressed a revolver against his side; the other got in front with the driver and held a gun against his side, and told him to drive up High Street and make no outcry. The taxicab then drove off as though nothing had happened; John Harrington, a bystander, thought at first it was some kind of joke, and by the time he realized what was up the taxicab had disappeared.

Boston Paper Trade Happenings

BOSTON, Mass., September 5, 1932.—Arnold-Roberts Company and John Carter & Co., Inc., have added to their lines Revenue Bond, made by the American Writing Paper Company, Holyoke, Mass., and are stocking it in their warehouses.

Lt. Col. Walter M. Pratt, of the Pratt Paper Company, is chairman of the convention committee of the National Convention Military Order World War, to be held at the Mayflower Hotel, Washington, D. C., October 6, 7 and 8.

Charles W. Fields, of Baird & Bartlett Company, has returned from a two weeks vacation to Bath, Me., and Bristol, N. H.

Trade Practice Rules for Waste Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., September 7, 1932.—Trade practice conference rules adopted by waste paper dealers and packers of the country at a conference in New York, March 14, under direction of Commissioner Charles H. March, have been acted on by the Federal Trade Commission. Five rules were approved by the Commission and placed in Group I, while the remaining eleven were accepted as expressions of the trade and designated Group II.

The first Group I rule provides in part that willful delivery of an inferior product against a contract for a particular grade of waste paper by means of false packing that cannot be readily discovered, or substitution of an inferior grade of material without permission of the purchaser, is an unfair trade practice. Other Group I rules relate to such practices as defamation of competitors; offering money or anything of value to agents of customers or competitors' customers; inducing breach of contract, and selling goods below cost with the intent of injuring a competitor.

One Group II rule is to the effect that issuance of fictitious price quotations for purchase or sale of waste paper solely to attract customers, is condemned by the industry. Another rule declares that the industry condemns submission of false claims to a supplier when they are not founded on actual mill reports or are not substantiated by authentic debit bills. Other Group II rules relate to such subjects as issuance of fictitious bills of lading to secure advances of money when the contracts provide otherwise; repudiation of contracts; intentional failure to fill orders or perform contracts; failure of dealers or brokers to give credit for overweights in violation of agreements as to cash discounts; accurate methods of cost finding; arbitration, and a committee on trade practices.

The Commission's statement to the waste paper dealers is as follows:

"A Trade Practice Conference for Waste Paper Dealers and Packers was held at the Hotel New Yorker, New York City, March 14, 1932, under the direction of Commissioner Charles H. March, of the Federal Trade Commission, assisted by M. Markham Flannery, Director of Trade Practice Conferences. It was estimated that seventy-five per cent of the dealers and packers, based on tonnage, were present or otherwise represented at the Conference.

"After a brief statement by Commissioner March, the Conference discussed and adopted sixteen resolutions dealing with various trade or business practices. The Commission, after consideration, has reworded some of these resolutions and has divided them into Group I and Group II, as set forth in the accompanying statement. The rules in Group I the Commission has approved; those in Group II the Commission has accepted as expressions of the trade.

"The Commission has directed that notice be given that in referring to or quoting trade practice conference rules, the form in which they appear in the Commission's Official Statement should be followed with reference to wording, grouping, numbering and lettering.

GROUP I

Rule 1. Willful delivery of an inferior product against a contract for a particular grade of waste paper by means of false packing that cannot be readily discovered, the effect of which is to deceive the purchaser, or the substitution of an inferior grade of material against a contract calling for a particular grade without the permission of the purchaser and ultimate consumer with the intent and effect to deceiving the purchaser and ultimate consumer, is an unfair trade practice.

Rule 2. The defamation of competitors by falsely imputing to them dishonorable conduct, inability to perform contracts, questionable credit standing, or by other false representations, or the false disparagement of the grade or quality of their goods, with the tendency and capacity to mislead or deceive purchasers or prospective purchasers, and the tendency to injuriously affect the business of such competitors, is an unfair trade practice.

Rule 3. Directly or indirectly to give or permit to be given or offer to give money or anything of value to agents, employees, or representatives of customers or prospective customers or to agents, employees, or representatives of competitors' customers or prospective customers, without the knowledge of their employers or principals, as an inducement to influence their employers or principals to purchase or contract to purchase industry products from the maker of such gift or offer, or to influence such employers or principals to refrain from dealing or contracting to deal with competitors, is an unfair trade practice.

Rule 4. Willfully inducing or attempting to induce the breach of an existing contract, or the interference or attempted interference with the performance of any contractual duty for the purpose and effect of injuring or destroying the patronage, property or business of a competitor, is an unfair trade practice.

Rule 5. The selling of goods below cost with the intent and with the effect of injuring a competitor, and where the effect may be to substantially lessen competition or tend to create a monopoly or to unreasonably restrain trade, is an unfair trade practice.

GROUP II

Rule A. The issuance of fictitious, inflated, deflated or misleading price quotations or offers for the purchase or sale of waste paper with no purpose to accept proposals received or to make sales at the prices quoted but solely to attract purchasers to his place of business is condemned by the industry.

Rule B. The submission of false claims to a supplier when same are not founded on actual mill reports or are not substantiated by authentic debit bills is condemned by the industry.

Rule C. The issuance of fictitious bills of lading or other documents of title, or the willful inclusion of erroneous weights or other information therein, for the purpose of securing advances of money or full payment when the contract provides otherwise, is condemned by the industry.

Rule D. The practice of neglecting or failing to return signed contracts or confirmations of verbal or telephone agreements of purchase and sale with the end in view of later relying on the absence of any signed contract or memorandum as ground for repudiation of the agreement is condemned by the industry.

Rule E. Contracts, either written or oral, are business obligations which should be performed in letter and spirit. The repudiation of contracts by sellers on a rising market, or by buyers on a declining market, is equally reprehensible, and is condemned by the industry.

Rule F. The intentional failure to fill orders or per-

form contracts except for Act of God or other lawful cause, or the intentional withholding by the purchaser of shipping instructions with the intent of avoiding the contract is condemned by the industry.

Rule G. The failure of dealers or brokers to give credit for overweights, where credit for overweights has been given by the consumer, is condemned by the industry.

Rule H. Violation by either party, buyer or seller, of the agreement between them as to the discount for cash is condemned by the industry.

Rule I. It is the judgment of this industry that an accurate knowledge of costs is indispensable to intelligent and fair competition and the adoption of accurate methods of cost finding and estimating is recommended by the industry.

Rule J. The industry approves the practice of handling disputes in a fair and reasonable manner, coupled with a spirit of moderation and good will, and every effort should be made by the disputants themselves to arrive at an agreement. If unable to do so they should agree, if possible, upon arbitration under some one of the prevailing codes.

Rule K. A Committee on Trade Practices is hereby created to cooperate with the Federal Trade Commission and to perform such acts as may be proper to put these rules into effect.

The Eclipse

31 Pilgrim Road, Waban, Mass., September 2, 1932.
Editor, PAPER TRADE JOURNAL:

The eclipse of the sun on August 31st was total in portions of Canada and New England. I had selected a suitable location in Portsmouth, N. H., on some rising ground not far from the plant built many years ago by the White Mountain Paper Company, now owned and partly occupied by the Atlantic Gypsum Products Company. These splendid buildings, a monument to the imagination, to what seems now, of distant times, stand there overlooking the quaint and interesting city. The digester house, from which, not long ago, the digesters and blow-pits had been removed, towers above all, making it necessary to choose a location to view the eclipse enough to the northwest to get the full effect of the on-rushing shadow soon to sweep down from Northern Quebec.

The whistle of the former paper mill was blown as the moon took the first nick out of the sun's edge and I wondered how many workers in the pulp and paper mills along the belt of totality were watching the great event.

Away to the northwest and pulp mill at La Tuque must surely be enjoying the spectacle. Down sweeps the shadow over the East Angus mills, famous for Bache-Wiig's successful sulphate plant, one of the first of its kind this side of the Atlantic, into northeastern Vermont, passing over the Gilman paper mills, located in the town noted for its no-unemployment, over the greater part of New Hampshire and a portion of Maine, allowing the machine-tenders, acid and caustic makers, grinder-men, the wood-room crew, managers and all the others in the mills at Groveton, those of the Brown Company, under the eye of Mount Washington, those in Rumford, a town grown up thanks to its natural advantages and good management and in the big Warren mills, near Portland, the rare opportunity of viewing the sun's corona.

On went the shadow over northeastern Massachusetts, the line of totality just grazing the mills of the Champion-International Company at Lawrence and the boxboard mill down the Merrimack River. Out over Massachusetts Bay continued the shadow crossing Cape Cod, the edge of totality a few miles east of the site of a former pulp mill, now happily forgotten, the promoters of which contemplated drawing their wood supply from the picturesque stands of pine timber growing on the Cape. From there the shadow went out to sea, losing itself in the sunset.

During the early part of the transit of the moon across the sun Portsmouth did have some thin clouds, but not heavy enough to prevent a satisfactory observation and half an hour before totality the sky was clear for an area to make one expect a perfect "seeing" of the event. However, the unexpected arrival of a thin cloud did just prevent making it perfect, but none the less, a most beautiful and impressive sight. Just as the last sparkle of the sun disappeared, so quickly did the wonderful corona burst forth, that it seemed as if some hidden mechanism had caused its appearance, only to be snapped off at the first flash of the emerging sun. The wonders of the Universe are beyond comprehension, but it must be admitted that the work of man, to be able to predict to a nicety the coming of such an event, as the eclipse of the sun, is worthy of unstinted praise.

HERBERT S. KIMBALL.

Boston Paper Market Active

BOSTON, Mass., September 5, 1932.—The general better feeling which has been developed in the last few weeks continues in the Boston paper trade. In some cases a decidedly active demand is felt. With more factories reopening, particularly in the textile industry and more operation in the shoe industry, substantial orders have been placed for bonds, ledger, wrapping paper and other needed supplies obtainable from jobbing houses. For the week before the holiday, usually dull, business has been good, at least in some quarters. There has been more inquiry in the fine writing paper field. The kraft situation has improved. Prospects as a whole appear favorable for a continued upward trend in the immediate future. A moderate volume of orders have been received by box board dealers and representatives of manufacturers, but the trade is hopeful for a more lively movement.

Conditions in the paper stock market have improved, with a more favorable sentiment in the trade and prices generally firm. There is much more demand for No. 1 kraft so that a price movement has been stimulated, pushing quotations up to .80 to .85 and even .90. It is stated that at least three or four very large mills have "flooded the market with inquiries." Advances have taken place in a number of the bagging grades. Foreign gunny is now quotable at 1.10, against a former price of 1.00; domestic gunny at .80 @ .90, compared with a former range of .75 @ .80; scrap sisal at .75 @ .85, formerly at .60 @ .75; heavy wool tares at .65 @ .75, against a former range of .60 @ .65, and heavy baling bagging at .90 @ 1.10, against a previous range of .80 @ 1.00. New and old domestic rags are unquotably changed, but in foreign rags, old fustians have declined from .85 to .75.

Pacific Mills Make Improvements

Expenditure of $127,000 on a two-story addition to its present paper converting plant at Vancouver, B. C., has been announced by Frank N. Youngman, vice-president and general manager of Pacific Mills Limited, which also operates a mill at Ocean Falls, B. C.

Plans for the addition call for a building 135 x 55 feet in area with a steel truss roof and heavy steel sash of reinforced concrete construction on piling foundations. Provision is being made for a boiler house 2,000 square feet in area which will be erected at some future date.

The top floor of the addition will be used for manufacturing equipment, $100,000 of the estimated total expenditure being for machinery, the ground floor for storage.

PHILADELPHIA TRADE OUTLOOK BRIGHTENS

(Continued from page 11)

and Bag Corporation in the Philadelphia territory, will on October 1 join the forces of the Brown Paper Mill Company, Inc., of Monroe, La. Mr. Wantling, who has been in charge of the sales in this section for the Continental corporation and the Southern Kraft Corporation, will in the course of his duties with the Brown Company travel the United States and renew many old acquaintances, as he has a wide circle of friends among dealers and jobbers throughout the country. His long connection with the trade throughout eighteen years brought him in contact with dealers of the nation. For twelve years he was associated with the Frank L. Scott Company leaving that concern to join the Continental corporation. He is a noted trap shooter and has been awarded championship trophies for his skill with the gun. In 1929 he won the amateur championship of the United States and last year finished fourth in the first open trap shooting championship of the world at Vandalia, Ohio. In 1931 he also won high average honors for the State of New York with a mark of .9737 on 2700 registered targets and has at times held the clay target championship of both the New York Athletic Club and the Penn Athletic Club of Philadelphia.

Al Seigel to Represent Continental

Following the resignation of J. H. Wantling from the Continental Paper and Bag Corporation, as head of Philadelphia sales, Al Seigel, who has been connected with the New York offices, will take over his duties here, at the Quaker City sales offices in the Land Title and Trust Building. Mr. Seigel was at one time assistant to George Stuhr, in charge of the sales of the products of the Continental Paper and Bag Corporation with offices in New York City.

Cellulose and Paper Converting Co. Makes Dime Rolls

With the rapidly growing fad for novelties made from cellulose, the Cellulose and Paper Converting Company, subsidiary of the Enterprise Paper Company, 3rd and Callowhill streets, has been developing its dime roll products, sold by leading five and ten cent stores and others as well as the paper distribution trade. The new 10 cent resale roll of cellulose is packed two sheets in a roll, size 20 x 22 and resells for 10 cents. It is made in all colors. The firm is circularizing the paper trade throughout the eastern section of the country with samples of its new lines. They are made in all colors. Another product of cellulose is the Lustre Shred, which the firm has been featuring and has taken on a large volume of business for this line of shredded cellulose used for packing and decorative purposes and for wrappings, novelties and like uses. David Back, of the firm, who is in active charge of the cellulose division, is enthused over the successful launching of these new trade products.

Joseph Constance Made Purchasing Agent

Joseph Constance, who has been connected with Raymond McNutt for more than a decade, has been made purchasing agent of the firm, with headquarters at 9th and Sansom streets. He takes over the duties of Sparta Fritz, who was formerly associated with the firm, assuming the position last week. Mr. Fritz, who as one of the well known Philadelphia paper trade associates, has been linked with the industry for more than a score of years, will after a brief vacation announce his association with another paper concern.

Simon Walter Visits New York Mills

Simon Walter, head of S. Walter, Inc., wrapping paper and specialties, 144 North 5th street, who attended the Hammermill Distributors Convention, held in Erie, Pa., made a tour of New York State paper mills before returning to his desk last week.

New Waxed Paper Plant Starts

STROUDSBURG, Pa., September 6, 1932.—The International Waxed Paper Products Corporation, of Stroudsburg, has started operations with a full force of employes and orders sufficient to keep it running at full speed for many months.

A meeting of the board of directors was held last week at which time Ned Hawes, of Stroudsburg, was elected president and general manager of the corporation. A considerable amount of outside capital has been interested in the corporation, this interest operating several large paper mills in the east where all raw material for the local plant will be produced.

It is expected that the plant within a few days will be producing 10,000 pounds of the waxed paper every day and will be run at full force with all local labor. The present plans call for future expansion with a considerable amount of new machinery within a short time.

New Electric Hoist

The Philadelphia Gear Works, Philadelphia, Pa., has added to its line a new electric hoist, built in sizes from ¼ ton to 3 tons, inclusive. The hoist has the following features: high lift with low headroom; noiseless operation; no load brake necessary; balanced so that load is always under exact center of rail; hoist swivel trolleys turn on 4-foot radius; fine control of load; operating mechanism sealed against oil, dirt and oil-leakage; heavy duty construction and interchangeability of parts. Standard electric motors are used and Timken roller bearings. The hoist is push button controlled. Hook swivels are ball bearing equipped. The cable drums are of large diameter with accurately machined grooves. Nickeled bronze worm gears, hardened steel trolley wheels with ball bearings, nickel-steel heat treated helical gears and hardened and ground thread worms, automatic upper limit hook stop; forged steel hooks and positive oil-bath lubrication are among the other features.

Mills Report Improvement

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., Sept. 3, 1932.—Improved business conditions are reported from a number of the prominent papers mills in this section and the majority are again running five days a week. The lengthening of the schedules was brought about in most instances through an increased volume of business.

Announcement was also made by the Bagley & Sewall Company of an improved trend and a number of orders have been received which will keep employees busy. It is understood that the entire force will again be employed as soon as the volume of orders will permit the taking back of these employees.

Obituary

Seth Williams

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., August 30, 1932.—Seth Williams, 87, for many years previous to his retirement well known paper mill superintendent, died Friday night at his home 244 Maple street, after a long illness. He was born in Manchester, England, in 1845 and learned the paper trade there. He was sent to Calcutta by the British Government to study technique and later had charge of paper mills in Canada before coming to this country in 1867.

He first went to Philadelphia to manage mills of the Hamilton & Sons Paper Company and from there came to the Dickinson Paper Company. For the last ten years of his active life he had been superintendent of the Riverside Division of the American Writing Paper Company, Inc.

Mr. Williams had traveled widely in this country and abroad. He was a member of Mount Tom Lodge Masons and the Second Congregational Church. Besides his wife he left three sons, Seth, Jr., of the Crocker Division of the American Writing Paper Company; Alexander, of Monroe Bridge; and Leonard, of Morristown, Pa.; and three daughters, Mrs. James B. Stewart, of Asbury Park, N. J.; Mrs. John Larson, of Longmeadow; and Mrs. William E. Adams, of Pittsfield.

The funeral was held yesterday afternoon at the Alger funeral parlors. The Rev. Dr. E. B. Robinson officiated and burial was in the Elmwood cemetery.

Oscar E. Hinds

[FROM OUR REGULAR CORRESPONDENT]

WATERTOWN, N. Y., September 3, 1932.—Oscar E. Hinds, prominent paper mill engineer of Northern New York, died early in the week following an extended illness. He was 85 years old. His connections with engineering extended to over sixty years during which he handled many notable achievements.

Among the engineering projects which he supervised was the building of the Ontario paper mill between Brownville and Glen Park; construction of the Deferiet mill of the St. Regis Paper Company, and others. He was regarded as among the most prominent men in this section but remained modest to the end.

Prospects Brighter in Miami Valley

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, September 6, 1932.—There are indications on all sides of reviving trade conditions and the paper trade of the Miami Valley is sharing in these prospects, and in some cases, actualities.

Consequently, it was with unusual vim that the working forces of Dayton and surrounding towns joined Monday in observing Labor Day. Always in this city the event means the outpouring of thousands and thousands of families who conduct outings, one of the chief meeting places being the Montgomery County Fairgrounds, South Main street. More than 30,000 persons assembled on the grounds and an appropriate program was followed. In addition, there were horse races and an attractive exhibit of manufactures, arts, agricultural products and live stock, the day having opened the great annual Montgomery County Fair, second in importance to the State Fair which closed last week in Columbus.

Mills in Middletown, Franklin and Miamisburg are making improvements of various kinds while few, if any establishments, have permitted the idle period to pass without installing some changes of importance. When the big rush starts, it is fair to say that the valley mills will be in good shape to fill orders promptly.

On the occasion of Labor Day, the International Envelope Corporation of this city, which recently met Government demands for an increased output of stamped envelopes and wrappers, due to the change in the postage rate, issued a public statement in which it said that "confidence in our own ability must be the pathway to better conditions which will come with the same certainty that marks the rising of the sun."

The Corporation further said: "It is just as unwise to be overly optimistic as unduly pessimistic and with its characteristic equanimity and poise, Dayton, yielding to neither extreme, is battling with unfavorable conditions and is working its way out of the wilderness."

"The resourcefulness of the city was brilliantly exemplified," said the statement, "during the flood of 1913. The ability of the city to 'come back' rapidly was glorified by the nation. Dayton's assets of industrial diversity, mechanical ability and financial conservatism are bound early to lead this city out of the morass of uncertainty.

Hold Sales Conference at Carthage

CARTHAGE, N. Y., September 6, 1932.—Sales representatives of the Crown, Zellerback Corporation, National Paper Products Sales Company, Crown-Williamette Corporation, Sanitary Products Company and the National Paper Products Company held a conference here early in the week at which considerable business was transacted. A. B. Lowenstein, manager of the eastern sales division, presided. The conference was staged for the purpose of acquainting the sales representatives with the improved products which are being turned out at the local mill and also with a view towards stimulating sales in the Northern New York territory. The local mill of the National Paper Products Company is among the concerns which have enjoyed steady operations for several years past. The sessions were concluded with a banquet at the Carlowden Country Club where an enjoyable program was carried out.

Among the officials of the allied companies in attendance were H. L. Zellerbach, vice-president of the Crown, Zellerbach Company, W. R. Waters, vice-president of the Sanitary Products Corporation, C. F. Hohwieler, office manager of the Crown, Zellerbach Company, and Wayne Brown, of the Crown-Willamette Corporation. Other sales representatives included A. B. Lowenstein, E. H. Burton, G. W. Harvey, L. H. Cook, P. Firth, L. H. Cook, W. L. Kelly, J. G. Moran, G. F. Whitaker, R. F. Matthews, F. J. Symonds, E. J. Kelly, J. K. Chambers, J. A. McDonald, H. C. Bleil and H. A. Munson.

Unloading Russian Pulpwood

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., September 6, 1932.—Unloading of the pulpwood ships from Russia are being hampered through an agreement made which calls for the discharge of but one ship at a time. An effort is now being made to revise the agreement in order to prevent congestion inasmuch as vessels are arriving daily. Another large shipment from Russia arrived this week which will later be conveyed to the mills of the International Paper Company in Northern New York. Schedules also show that a large consignment of the Canadian product is to arrive here next week for mills hereabouts.

Announcement of the initial shipment of china clay to the port has been made. The shipment is to be moved by barges from Georgia to Albany for the International Paper Company.

New York Trade Jottings

Mississippi Pulp Products Corporation, New York, wood and paper products, has been chartered under the laws of the State of Delaware, with a capital stock of 2,000 shares common.

* * *

The weekly luncheons and meetings of the Eastern Division of the Salesmen's Association of the Paper Industry will be resumed next Monday, September 12, at the Hotel Roosevelt, New York.

* * *

The Alling & Cory Company, paper box manufacturers, of Rochester, N. Y., has leased the store, basement and second floor at 133-141 West 21st street, New York, comprising 30,000 square feet of space, from Borough President Samuel Levy, of Manhattan.

* * *

Royal S. Kellogg, secretary of the News Print Service Bureau, with headquarters at 32 Madison Avenue, New York, has just returned to duty after an enjoyable two weeks' cruise aboard his auxiliary ketch, *The Roon*. He was accompanied by his efficient and charming first mate, Mrs. Kellogg. Considerable time was spent around Nantucket and Martha's Vineyard, and Mrs. Kellogg took the opportunity to make a number of interesting sketches.

* * *

Walter Geist, assistant manager of the Milling Machinery Department, including the Texrope Drive Division, of the Allis-Chalmers Manufacturing Company, will sail for Europe on the *Europa*, September 9. Mr. Geist will spend three months on the Continent and the British Isles, where he will study conditions and visit Allis-Chalmers manufacturing and sales organizations in England, France, Germany, Italy and other countries.

* * *

The MacAndrews & Forbes Company, paper box manufacturers, etc., New York, reported a net income of $267,211, or 64 cents a common share, for the six months ended June 30, comparing with $430,396, or $1.10 a common share in the like period of last year. The net for the June quarter totaled $127,315, after taxes and other charges, being equal to 30 cents a common share, against $212,570, or 54 cents a share in the June quarter last year.

De Laval Single Stage Double Suction Pump

Centrifugal pumps for large outputs, as in water works pumping stations, are described in Catalog B-4, issued by the De Laval Steam Turbine Company, Trenton, N. J. The distinguishing features of these single stage, double suction pumps include a casing split horizontally in the plane of the axis of the shaft, with piping connections in the lower part of the casing, so that the internal parts are at once accessible upon removing the casing cover, and the protection of the main members of the pump at points where wear may occur by renewable wearing parts, the most important of which are the wearing rings which protect the casing and impeller at the joints where the suction chamber is separated from the discharge chamber. These wearing rings are of the labyrinth type and, it is claimed, allow only one-third as much leakage with the same radical clearance as do flat rings; also, they wear much less rapidly. Among the pumps illustrated are geared turbine driven pumps delivering 75,000,000 gallons per day against 150 ft. head; and motor driven pumps of 30,000,000 gallons per day capacity against 250 ft. head, which, on the efficiency tests, showed a combined motor and pump efficiency of 84.5 per cent.

Blake, Moffitt & Towne Changes

Announcement has just been made of the appointment of Walter W. Huelat as manager of the Fine Paper Department of the Los Angeles division of Blake, Moffitt & Towne. Mr. Huelat has been connected with the Portland division for over twenty years and is well known in the paper industry in the northwest. Before leaving Portland, a large number of his friends in the printing fraternity, tended him a farewell dinner at the Chamber of Commerce, and he was also the recipient of a number of other farewell gatherings.

His position at the Portland division will be taken by Al. Sherrig, who has been connected with the organization for a number of years, calling on the printers in the Oregon territory.

In the estimation of the printers throughout the northwest, Mr. Huelat stands in a high position as a proponent of sound merchandising, fair dealing and interested cooperation. It is felt that in his new position in Los Angeles, offering as it does a wider field of activity, the company has made a wise move in placing his services at the disposal of the large southern California market.

Mr. Huelat, while in Portland, has for a considerable period devoted a great deal of attention to civic affairs and is an active member of the Chamber of Commerce. His enjoyment of the out of doors led him to associate himself with the Multnomah Golf Club, the Multnomah Amateur Athletic Club and the Portland Rowing Club, being for many years president of the latter organization.

In assuming his new duties in charge of the Los Angeles Fine Paper Department, Mr. Huelat will have supervision over both the purchasing and selling activities as applying to the three southern California divisions of Los Angeles, San Diego and Long Beach, as well as the Company's two Arizona divisions, located at Phoenix and Tucson.

According to F. M. Couch, vice-president and manager of the Los Angeles house, no other changes in the sales staff will be made. T. M. Denison will continue to direct the sales of the Fine Paper Department, while the purchasing will continue in charge of R. K. Erlandson.

Taggart Bros. Report Better Business

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., September 6, 1932.—Officials of Taggart Brothers, Inc., report that the business of the past month has been about double that of July and claim that the outlook is very encouraging. About 75 workers are being employed at the bag producing plant and indications now are that normal production will be observed. The Bates Valve Company, also a division of the St. Regis interests, is also reported taking care of an increased volume of business. Other branches of the St. Regis Company here are expected to be running near normal during the coming fall and workers are to be recalled as soon as an increased volume of business permits.

New Mill for Fitchburg

[FROM OUR REGULAR CORRESPONDENT]

FITCHBURG, Mass., September 5, 1932—The old No. 3 mill of the Fitchburg Paper Company, River street, is being torn down. According to George R. Wallace, president of the company, a new mill will eventually replace the one being razed. The new mill will be an addition to No. 1 or No. 2 mills which have been rebuilt and are being operated with modern equipment. The machinery on the No. 3 mill has been removed to the other mills. The No. 3 mill was the third built by the company, is nearly 55 years old, and had not been operated for two years.

..MILLS THAT ARE CUTTING COSTS WITH AIR.

Installation of Great Northern 4' Grinders — East Millinocket Plant.

Great Northern Paper Co.

Millinocket, Maine.

Consider the part that AIR plays in the operation of your mill. AIR heats, AIR dries, AIR ventilates—three major elements of production costs. Its degree of efficiency depends upon the way it is handled. AIR can be properly utilized to improve production and reduce operating expense,—or it can be mis-directed with consequent continuous waste of time, effort and money.

Great Northern Paper Company plants are making AIR do its share in reducing waste and inefficiency. The grinders shown above equipped with a Ross Exhaust System were in full operation when photograph was taken. The complete absence of troublesome fog illustrates one of many ways in which Ross Air Handling Systems are being utilized in this successful mill.

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NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Fitchburg, Mass.—Crocker, Burbank & Co. have begun construction of a new addition to their paper mill on Westminster street, to be one-story and basement, 50 x 60 feet. Estimated cost not announced. General contract was recently let to Wiley & Foss, Central street, Fitchburg. The paper company has work in progress on its Whitmanville storage dam project, for water supply for mill service, and in order to give maximum employment, is working a force of about 100 men on half-time on this development, and also has eliminated the use of labor-saving machinery for the reason noted.

Grand Rapids, Minn.—The Blandin Paper Company has begun the superstructure for its new power house, recently referred to in these columns, and will push the unit to early completion. General contract has been let to the James Leck Company, 211 South Eleventh street, Minneapolis, Minn. Award for brick work has been made to the Wrenshall Brick Company, Builders' Exchange, Duluth, Minn. New station will cost about $125,000, with equipment. Richard E. Lutz, Corn Exchange Building, Minneapolis, is consulting engineer.

Hartford City, Ind.—Fire, recently, caused damage at the local plant of the Fort Wayne Corrugated Paper Company, with bulk of loss in raw material department, totaling about 200,000 pounds of raw paper stock. Buildings and equipment were only slightly effected. An estimate of loss has not been announced.

New York, N. Y.—The D. & H. Paper Box Company, recently formed by Louis Davis, 464 Junius street, Brooklyn, N. Y., and associates, has leased space in the building at 136 Greene street, and will occupy the new plant for the manufacture of paper boxes and containers. It is expected to equip and begin operations at an early date.

Turners Falls, Mass.—The International Paper Company, 220 East 42nd street, New York, is resuming operations at its Montague Mill, Turners Falls, following shut down since last March. Full time schedule will be operative with sizable working quota. It is expected to continue operations for an indefinite period.

Fall River, Mass.—The J. & J. Corrugated Box Corporation, recently organized by Meyer and E. M. Jaffe, Fall River, plans operation of a local plant for the manufacture of corrugated boxes and containers. First noted will be president of new company, and E. M. Jaffe, treasurer.

Montgomery, Ala.—Walter P. Holley, 119 Molton street, Montgomery, is at head of project to establish and operate a local plant for the manufacture of special paper bags of mothproof character. It is expected to have the converting works ready for service at an early date.

Grand Haven, Mich.—A number of foreign shipments of pulpwood are being received at the local port, for paper-manufacturing companies at Kalamazoo, Mich. In one week alone, three large cargoes were delivered. Other early shipments are scheduled.

Amite, Ala.—The Gulf States Crate Company, recently organized by local interests to manufacture a line of fiber products, is said to have plans maturing for initial unit of proposed new plant, to be one-story, equipped for the manufacture of fiber berry cups and kindred specialties. It is expected to have the mill ready for service by the close of the year. The company is capitalized at $250,000, and is headed by H. S. Weigle, Sr., president, and H. S. Weigle, Jr., secretary and treasurer, both being identified with the Amite Bank & Trust Company, Amite. The new plant is reported to cost close to $60,000, including machinery.

Hartford, Conn.—The Belamose Corporation, manufacturers of cellulose rayon products, is increasing at its mill and has recalled about 400 workers. It is expected to advance this number by about 100 additional operatives early in September, the entire mill to run on a full time production schedule.

North Hoosick, N. Y.—The Stevens & Thompson Paper Company, manufacturer of tissue papers and kindred stocks, has arranged for a change in company capitalization from $1,500,000 to $1,000,000.

Syracuse, N. Y.—The Pa-Pro Company, manufacturer of fiber boxes and containers, is increasing operations at its plant. Company reports improved orders for box units.

New York, N. Y.—The B. & R. Paper Box Company, Inc., recently organized by Philip W. Behr, 3152 East Sixth street, Brooklyn, N. Y., and associates, plans operation of a local plant for the manufacture of folding paper boxes and containers. Herman Koenig, 1995 Webster avenue, Bronx, New York, is interested in the new organization.

Buffalo, N. Y.—The DuPont Rayon Company has reopened its local cellulose rayon mills, with a working force of about 250 persons, and will step up production in September, giving employment to larger working quota.

Jacksonville, Fla.—Fire recently destroyed a plant unit of the Strachan Shipping Company at the Commodores Point Terminal, the structure containing about 2,600 tons of news print of the International Paper Company, New York.

Newark, N. J.—The Rummel Fiber Company, 85 Columbia street, is advancing operations at its plant on Coes place, following receipt of a large order for material. It is expected to hold to improved production basis for an indefinite period.

Mount Holly Springs, Pa.—The Mount Holly Paper

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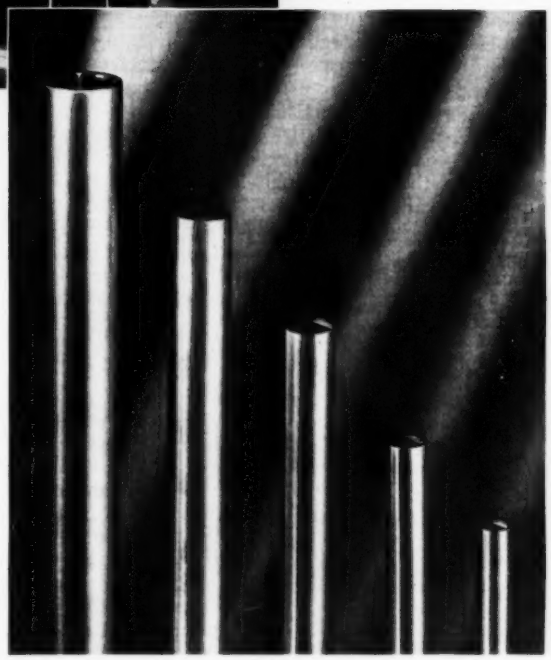
18-8
USS 17-USS 12
STAINLESS
AND HEAT RESISTING
PIPE *and* TUBES



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Here is a material that is highly adaptable to various uses in the paper industry. It not only offers high resistance to corrosion—a vital factor in lines and equipment of a paper mill, but it also gives protection from certain acids. Wherever tubular parts of equipment are subject to staining or corrosive action of cleansing agents or paper-making chemicals, this material will prove highly satisfactory. NATIONAL engineers and technicians will gladly assist in determining the best application of this product to any paper mill equipment. Ask for informative booklet—"NATIONAL U S S Stainless and Heat Resisting Pipe and Tubes".

U S S Chromium-Nickel Alloy Steels are produced under the licenses of the Chemical Foundation, Inc., New York; and Fried. Krupp A. G. of Germany

NATIONAL TUBE COMPANY

Frick Building, Pittsburgh, Pa.

QUALITY PRODUCTS — Dependable Service

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

PRINCIPAL SUBSIDIARY MANUFACTURING COMPANIES

AMERICAN BRIDGE COMPANY
AMERICAN SHEET AND TIN PLATE COMPANY
AMERICAN STEEL AND WIRE COMPANY
CARNEGIE STEEL COMPANY
COLUMBIA STEEL COMPANY
CYCLONE FENCE COMPANY
FEDERAL SHIPBUILDING AND DRY DOCK COMPANY
ILLINOIS STEEL COMPANY
NATIONAL TUBE COMPANY
OIL WELL SUPPLY COMPANY
THE LORAIN STEEL COMPANY
TENNESSEE COAL, IRON & R. R. COMPANY
UNIVERSAL ATLAS CEMENT COMPANY

Pacific Coast Distributors—Columbia Steel Company, Russ Building, San Francisco, Calif. *Export Distributors*—United States Steel Products Company, 30 Church Street, New York, N. Y.

Company has increased production schedule at its mill and larger working quota is now engaged in different departments. The plant will hold to the new basis for some time to come, and has recently secured sizeable orders.

Tokyo, Japan—The Imperial Rayon Company, Tokyo, is planning an expansion and improvement program at cellulose rayon mills, and will arrange for a fund of 750,000 yen (about $175,000) for this work. An addition will be constructed at mill at Iwahuni, with installation of additional machinery to increase capacity by about 3 tons per day. Company is also planning for the constructiton of a new cellulose rayon mill at Hagi, as well as a similar plant at Otake, both in West Japan, each to cost over $400,000, with equipment.

Improved Technique for Bleaching Ground Wood With Hydrosulphite

After three years of experimentation in laboratory and mill with the bleaching effect of various chemical reducing agents on ground wood, a practical and efficient process which is said to be a distinct improvement over previous methods has been evolved by the technical staff of the Great Western Electro-Chemical Company.

With the process, all cooking of ground wood pulp in various bisulphite liquors is eliminated; retention periods of 18 to 24 hours for suitable bleaching action is reduced in the Great Western method to a few minutes. There are no fuel or heating costs since the reaction takes place at ordinary temperatures and its rapidity reduces overhead by speeding up production. No new equipment is required to install the process and the reagent cost is lower.

The process is already established as standard practice in several Pacific Coast and Canadian Mills. U. S. Patent No. 1,873,924 and Canadian Patent No. 307,440 have been granted to Great Western Electro Chemical Company, discoverer of the Hydrosulphite Process.

For news print, book papers, fruit wrap and kraft the Hydrosulphite Process is producing a whiter sheet even from Western Hemlock or dark and discolored woods than has heretofore been possible with any other bleaching agent.

TAPPI Divisional Changes

The Executive Committee of the Technical Association of the Pulp and Paper Industry has created a new division to be known as the Converting and Consuming Division.

This division will be made up of four committees, namely, Coating Committee, Laminating Committee, Carton Committee and Graphic Arts Committee. Chairman and personnel for these committees will soon be announced.

The Finishing, Processing and Converting Committee in the Operating Division has been discontinued and a new Finishing Committee will take its place.

The personnel of the Finishing, Processing and Converting Committee will continue as the newly formed Coating Committee, of which James J. O'Connor, technical director of the Mead Corporation is chairman.

American Rolling Mill Bulletin Out

The American Rolling Mill Company, of Middletown, Ohio., has just published a new bulletin entitled "Custom-Made Pipe for Paper and Pulp Mill Uses." The numerous illustrations included in the bulletin show where the American Rolling Mill Company's spiral welded pipe can be used in paper and pulp mills to advantage and profit.

The De Laval Propeller Pump

For handling relatively large volumes of liquid against comparatively low heads, the propeller type of pump can be operated at rotative speeds which are much higher than those suitable for ordinary centrifugal pumps. The liquid flows through the pump in smooth lines, without abrupt turns or change of direction. In a properly designed pump of this type, the liquid enters and leaves without turbulence or shock and the efficiency is high.

The De Laval propeller pump, made by the De Laval Steam Turbine Company, Trenton, N. J., is built for both horizontal and vertical installation and is available for all capacities and for heads up to about 40 feet. It is suitable for direct connection to a standard speed electric motor or steam turbine, or a speed reducing gear may be used, according to conditions. Its applications include circulating condenser cooling water, lifting storm water in drainage and sewage systems, irrigation service, and, in fact, all purposes within the head limitations.

The pump casing consists of two parts, which are separated in the plane of the center line of the shaft by a flat joint, that is maintained air and water tight by a thin paper gasket. The pump case cover can be lifted off to render the propeller and all interior parts accessible. The propeller is designed for the specified conditions of capacity, head and speed, and is finished on all surfaces, the blades being carefully filed and scraped to templates to insure the shape required by hydraulic design. The casing around the propeller is protected by a separate sleeve, which can be renewed should wear occur. This sleeve supports the guide vanes by which the liquid is directed in smooth flow-lines. The shaft is protected from wear by a removable protecting sleeve which extends through the stuffing box and provides a bearing surface for the packing.

At the coupling end the shaft is supported by a grease lubricated ball bearing with a separate ball thrust bearing in the same housing. At the propeller end, the shaft is supported by a bearing of the sleeve type. The stuffing box is designed for soft packing, with a lantern ring to facilitate water sealing where desired. The gland is split and can be removed without disturbing the other parts.

Import Committee Starts Action

The Import Committee of the American Paper Industry has started formal action involving foreign M. G. Sulphite wrapping paper by filing complaint of suspected dumping. Similar action is to be taken on foreign kraft wrapping, and is under consideration as to German vegetable parchment.

The United States Customs Court has rendered a decision whereby fourteen importations of embossed or coated boards of the general trunk board type are held dutiable at 30 per cent instead of 10 per cent as claimed by the importers.

Customs officials have held sunburst and embossed cover papers dutiable as decorated papers at higher rates than the 30 per cent provided for plain cover paper. An importation of M. G. Sulphite at Houston has been held by Customs officials to have been undervalued.

Cases involving paper estimated by Warren B. Bullock, manager of the Import Committee to be worth about $40,000 have been abandoned in the Customs Courts by the importers after protest had been carried to the court from the action of Customs officials. Among the cases were fifteen of writing paper and envelopes, seventeen of fancy box cover paper, and four on Canadian paper claimed to be standard news print but held to be dutiable as novel or tablet news.

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ESTABLISHED 1872

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COMING EVENTS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY. Fall Meeting, Nonotuck Hotel, Holyoke, Mass., September 14, 15 and 16, 1932

PAPER AND PULP SECTION OF THE NATIONAL SAFETY COUNCIL, Twenty-first Annual Safety Congress and Exposition, Wardman Park and Shoreham Hotel, Washington, D. C., October 3, 4, 5, 6 and 7, 1932.

THE TIME FOR REHABILITATION

"Financial and credit affairs are clearly and positively better. In fact, it might well be said that whatever weaknesses there were in the financial situation have been corrected or are in the process of being cured," according to A. W. Robertson, Chairman of the Board of Westinghouse Electric and Manufacturing Company, recently named head of the National Committee on Rehabilitation. Speaking last week to a large group of the business and industrial leaders of the Pittsburgh district, Mr. Robertson outlined the purpose and plans of his committee. This was the official inauguration of the activity of this committee which it is confidently expected will help put industry back into the swing of production, and men back to work.

At the conference of Business and Industrial Committees held in Washington August 26 and 27 a Central Business and Industrial Committee was created and a program of activities authorized. As a member of the Central Committee Mr. Robertson was asked to head up an organization known as the National Committee on Rehabilitation, the purpose of which is to induce manufacturing and other industries to make capital expenditures now for the rehabilitation of plant and replacement of obsolete and worn-out equipment. "Improvement or alteration work done now would be helpful in many ways. It would help unemployment. It would cost less. It would interfere little with routine production," said Mr. Robertson.

The chairmen of the Business and Industrial Committees of the twelve Federal Reserve Districts have been asked to select chairmen to head up Rehabilitation Committees in their respective districts. As these district chairmen are appointed, they will automatically become members of the National Committee on Rehabilitation. Joseph Dilworth is managing director, with offices in the Gulf Building, Pittsburgh.

It is the duty of these committees to contact all important industries within their district and urge them to do immediately such rehabilitation and modernization as is needed and desirable.

In discussing some basic reasons why business would be justified in spending money now for rehabilitation and modernization, Mr. Robertson said:

"Reserves in the Federal Reserve Banks, beyond what they are required by law to maintain, are above $300,000,000. Potentially such reserves suggest the basis for expansion of bank deposits, or, on the other side of the balance sheet, bank loans and investments, of approximately $3,000,000,000. In the past, large excess bank reserves have produced credit expansion. In the coming months, as confidence returns, and as funds are required by business, it is natural to expect that the law of credit expansion under like circumstances will work and that these excess funds will be put to use. This will tend to raise prices and to stimulate business generally.

"This expansion of reserves," said Mr. Robertson, "may be expected to go further because of the following factors in the situation. A few weeks ago the last of the gold withdrawals from Central Banks of this country for Continental Europe had taken place. Since then we have gained steadily in gold by an amount approximating $140,000,000. It is entirely likely that there will be a further increase in our gold supply from abroad. Such excess reserves will have the same effect on our bank deposits as the other excess reserves; namely, to induce credit expansion.

"As proof that hoarding is decreasing, our currency in circulation is turning over more rapidly since the first of July and is now returning to the banks. With confidence growing it should return to the banks in substantial amounts which will in turn increase excess reserves by a like amount.

"Under a recent law national banks may issue national bank currency against additional bonds other than those formerly eligible as a basis for circulation. It is certain that a substantial amount of additional national bank currency will be provided from this source and make an important addition to the excess reserves in banks which will have the same effect of inducing credit expansion."

Mr. Robertson feels that these trends are definite and actual and that while the amount of credit expansion which they will induce may be a matter of guesswork, it is reasonable to assume that it should amount to more than 5 billion dollars.

"In the past," he said, "this has always resulted in expansion of bank credit and there is every reason to believe that the same thing will happen at this time. It is also true historically that there is a national relationship between the use of bank credit on the one hand and business activity and prices on the other. Therefore, it is fair to

assume that, barring unforeseen events, we are coming into a period of business activity and advancing prices. The recent rise in security and commodity prices would seem to bear out these conclusions.

Continuing, Mr. Robertson said "The questions which men of affairs should ask themselves are:

"Have we arrived at the period when we should set our respective business houses in order in preparation for an early business revival, or stated in a somewhat different way: Have we arrived at the period when the country has been sufficiently deflated to make a concerted effort to start business in the other direction not only advisable, but absolutely necessary? It seems clear to me that the answer to this question should be 'Yes'. The work can be done to greater advantage now than later because of the favorable prices of labor and material. If done now, there will be less interference with production and in some cases labor could be employed which would substantially reduce the amount of relief being furnished to employees."

Paper Production for First Half

According to identical mill reports to the Statistical Department of the American Paper and Pulp Association, production of paper was approximately 13 per cent below the level of the corresponding six months of last year and inventories were 3 per cent smaller than a year ago. All major grades showed decreases. Production was in fairly close balance with demand in most grades as evidenced by the fact that almost all stocks were below the level of the year just past.

During the first half of 1932, manufacture in both the so-called cultural and mechanical grades was below the corresponding 1931 records; the mechanical grades, board, wrapping, etc., however, sliding off at the faster rate. This is contrary to the usual order for the mechanical grades are ordinarily more stable. The decrease in the cultural grades reflected the continued but now more gradual decline in advertising and printing.

For the first six months of 1932 the production of wood pulp was approximately 14 per cent below the level of the first six months of 1931, according to identical mill reports. Both the amount of pulp consumed by producing mills and the amount shipped to the open market showed substantial decreases from a year ago, the former being 12 per cent below the level of the first half of 1931 and the latter about 24 per cent less. Shipments of soda pulp to the open market were 42 per cent smaller than for the first six months of 1931, while shipments of news grade sulphite and groundwood diminished between 37 and 39 per cent. Shipments of bleached sulphite to the open market were 33 per cent smaller. Kraft pulp was the only individual grade showing greater shipments to the open market during the first half of 1932 as compared with the preceding year, the amount, however, consumed by producing mills was 18 per cent less than during the first half of 1931.

At the end of June, stocks of pulp on hand at producing mills were below the level of a year ago in the case of groundwood, kraft and soda pulp; kraft pulp was almost 40 per cent below the inventory level of a year ago. All the other grades showed increases in inventories.

REPORT OF PAPER OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JUNE, 1932

Grade	Production tons	Shipments tons	Stocks on hand end of month tons
News print	85,399	84,255	35,502
Book Uncoated	58,175	56,455	44,252
Paperboard	133,097	130,720	60,387
Wrapping	28,376	29,033	40,774
Bag	6,754	6,615	5,823
Writing, etc.	17,576	18,354	43,947
Tissue	6,357	6,290	7,231
Hanging	2,949	2,194	4,895
Building	3,925	3,397	3,893
Other grades	14,462	12,946	17,555
Total All Grades, June, 1932	357,070	350,259	264,259
Total All Grades, 6 Mos., 1932	2,364,113	2,363,531	264,259
Total All Grades, 6 Mos., 1931	2,705,664	2,703,533	272,298

REPORT OF WOOD PULP OPERATIONS IN IDENTICAL MILLS FOR THE MONTH OF JUNE, 1932

Grade	Production tons	Used during month tons	Shipped during month tons	Stocks on hand end of month tons
Ground Wood	60,094	62,562	1,437	67,542
Sulphite, News Grade	22,501	21,144	806	7,781
Sulphite, Bleached	16,062	14,883	814	3,272
Sulphite, Easy Bleaching	1,297	1,344	21	1,200
Sulphite, Mitscherlich	4,234	1,885	1,962	2,533
Kraft Pulp	20,801	15,709	5,060	3,592
Soda Pulp	11,616	9,426	1,739	2,802
Other Grades	184	210	38	163
Total All Grades— June, 1932	136,789	127,163	11,877	88,885
Total All Grades— 6 Mos., 1932	956,373	866,002	77,435	88,885
Total All Grades— 6 Mos., 1931	1,107,029	981,894	101,175	94,345

National Paper Trade To Meet

The National Paper Trade Association will hold its semi-annual convention Monday, Tuesday and Wednesday, October 3, 4 and 5 at the Stevens Hotel, Chicago, the same as two years ago. The convention was omitted last year on account of the depressed conditions which promised a small attendance, but will be resumed this year as usual.

Plans for the convention involve a radical departure from previous stereotyped program of Committee reports, etc. Instead of Commodity Committee meetings, open meetings will be scheduled. There will be a Kraft Meeting, a Gummed Tape Meeting, a Twine Meeting, etc., avoiding conflicts so far as possible, in order that members may cover every line that is of interest to them. Some very important reports will be presented with reference to direct selling and other matters of policy on which the National office has conducted extensive correspondence with the manufacturers. The executives and staff of the organization have built up a coherent plan of activity which is focused on this convention and which involve the presentation of some definite ideas as to policies and methods of distribution which will serve the best interest of the industry at large.

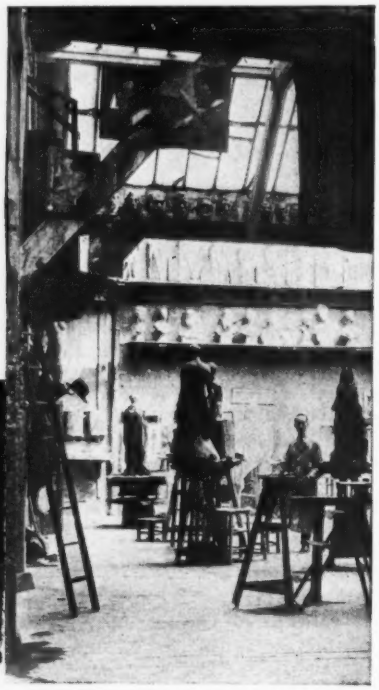
In the Fine Paper Division, the proceedings will cover plans for the proposed cost study presented by the special committee appointed at the February Convention; also reports and recommendations covering important conferences with a writing and Cover Paper Manufacturers and the Book Paper Manufacturers, which have been scheduled for this month.

During the present year the membership of the National Paper Trade Association has grown to the highest point in its history. It is to be congratulated on its accomplishments of the year and on the aggressive, constructive work it is carrying on.

New Stainless Steel Booklet

The American Sheet and Tin Plate Company, subsidiary of the United States Steel Corporation, of Pittsburgh, Pa., has just issued a new booklet entitled "American U S S Stainless and Heat Resisting Steel Sheets and Light Plates."

This interesting and instructive booklet contains a wealth of information regarding stainless and heat resisting steel sheets and light plates and is profusely illustrated. Copies of the booklet may be obtained upon application.



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Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Research and the Depression*

The following editorial from the August, 1932, Industrial and Engineering Chemistry is quoted with approval:

"CONTINUE RESEARCH. While the consensus of opinion seems to be that business is certainly no worse and perhaps slightly better than it has been, we are obliged to look forward to at least a few more months of distressing depression. Some industries between now and the first of January will be arranging their budgets for 1933. It must be borne in upon our captains of finance that research and the chemist have become permanent necessities for successful industries. They have become fixed charges, and the organization that would make progress can no more leave such an item out of its budget than it can omit insurance and taxes and still expect to survive. Capital needs only to remember the lessons of the past. That this lesson has been at least partially learned has been amply proved by the sincere reluctance with which some trained chemists have been separated from their customary employment. When prosperity returns, as it must, the chemist will again be in great demand, but he can perform the tasks that will then be placed before him only if he has been able during the interim to continue unabated the research which yields the information he will need to apply. Research to pay must be uninterrupted, must go on in continuity, and, instead of lessening the effort during times of depression, it is then that concentration can be put upon the most important problems.

A survey made recently by the National Research Council through its Division of Engineering and Industrial Research indicates that the leaders of the chemical industry are turning to research as a means for maintaining their profits and reducing losses to a minimum. More and more companies are coming to the realization that though the highest achievement of research is the creation of new industries, equal reward and benefit are to be found in the improvement of existing products and processes. This is in refreshing contrast to the all too prevalent faint-hearted attitude during the past few years which led many adversely affected companies to discontinue research staffs and abandon all development work. In fact, during the last session of Congress, it was seriously proposed that the Government cease to encourage invention and research and that a "closed season" be declared on all labor saving devices in the Patent Office. Several South American countries even penalized the use of machinery and another placed an embargo on the importation of labor saving devices. Such sentiment in this country appears to have been effectively squelched by the firm attitude taken by Dr. Sirovich, the chairman of the Committee on Patents of the House of Representatives, in favor of continued encouragement of invention.

To quote Dr. Sirovich:

"As in the past, so in the future, our welfare rests in the hands of those great mental geniuses who can subjugate the forces of nature to serve the will of man. Let us not turn back the clock of progress. Let us continue to lighten the burden of mankind through the production, elaboration and development of machinery that will make life easier and happier for man to live in. This can only be done by stimulating further invention, otherwise we shall degenerate and stagnate.

What has been said should not be interpreted as an argument against economy in research and development work. For economy in any line of human endeavor is commendable and in research as in all other phases of human activities there is a happy medium. One sure way of achieving economy without materially curtailing or crippling development work is to conduct a preliminary survey and investigation of every research problem before starting work on the solution. The investigation should include a thorough study of prior practices and devices as shown in the technical literature and patents. (See Bulletin 7 on Patent Searches in the August 9, 1931, issue of the PAPER TRADE JOURNAL.) In many cases a search indicates that the problem has already been solved and thus obviates duplication of effort. Many progressive companies have found it possible by means of carefully planned investigations to determine the tendency for future development and to direct their research activities so as to bring productive results in the shortest possible time.

In conclusion attention is directed to the fact that the Commissioner of Patents in order to encourage the investment of capital in newly developed inventions make applications "special" in cases where the inventor can make a satisfactory showing that manufacture of the invention on a quantity basis will surely be started if claims are allowed covering the invention. When an application is made "special" it has preference in order of examination over all other cases not marked "special." This enables the applicant to take out his patent in a relatively short time. Within three months of the allowance of the application, the inventor or owner of the patent must make a statement under oath showing:

(a) How much money has been expended in the manufacture of the invention;

(b) Number of devices manufactured;

(c) The extent to which the manufacture has increased the employment of labor.

* Contributed as Bulletin 15 by the Patents Committee of the Technical Association of the Pulp and Paper Industry, C. W. Rivise, chairman.

Pulp and Paper Industry Literature Review

Abstracts of Articles and Patents Compiled by the Abstracts and Bibliography Committee of the Technical Association of the Pulp and Paper Industry, A. Papineau-Couture, John F. Ohlson, C. E. Peterson and Clarence J. West, Chairman

The National Research Council, 21st and B Street, Washington, D. C., through Dr. Clarence J. West, extends the courtesy of its photostat service to members of the Technical Association of the Pulp and Paper Industry. Owing to a limitation of personnel and time, this service cannot be extended to non-members.

The charge for the photostat service is: 9 x 11 inches—18 cents per page, 18 x 11 inches—25 cents per page, 22 x 18 inches—70 cents per page, minimum charge, 50 cents.

Payment should be made upon receipt of invoice.

Copies of United States patents can be obtained from the United States Patent Office, Washington, D. C., for 10 cents each. Send currency, not stamps.

Raw Materials

The possibility of providing the Brazilian paper industry with indigenous raw materials. Fred W. Freise. Papier-Fabr. 30, No. 9: 101-102 (Feb. 28, 1932).—Valuable statistics on the Brazilian paper industry. 60 to 70 per cent of the pulp and ground wood used is imported. The bamboo grown yields about 90 tons per hectar of suitable land; other plant growths, rice straw etc. grow in great abundance.—J. F. O.

Concerning an investigation in the French paper makers school of the woods from the colonies. Vidal. Papier-Fabr. 30, No. 3: 31 (Jan. 17, 1932).—Numerous woods from the French colonies are investigated, but show, in general, that the fibers are short and without strength. There are practically no conifers in the French colonies. Abundant wood is present in Madagascar, but must be cooked with the sulphate process, since by other processes it is unsuitable due to the very poor color which can not be economically removed by bleaching.—J. F. O.

Concerning the fibril structure of the bast fibers. Alois Herzog. Papier-Fabr. 29, No. 51: 833-37 (Dec. 22, 1931).—The author shows in a thorough morphological manner that all bast fibers possess a fibril structure, which is not visible in the intact fiber because of the almost similar calculation index between cellulose and the cementing substance. Only after deformation through mechanical (crushing) or chemical (swelling) action can it be proven. Numerous micro-photographs are included.—J. F. O.

Cellulose and Lignin

High polymer organic natural substances. . K. H. Meyer. Zellstoff Papier 12, No. 1: (January, 1932).—The author discusses the construction of cellulose and its derivatives and the dependence of the physical properties of these materials to the type of its valence chain.—J. F. O.

The evolution of organic chemistry, especially the cellulose and pulp chemistry in the year 1931. D. Kruger. Zellstoff Papier 12, No. 2: 57-61 (February, 1932).—The author compiles in a comprehensive and scholarly manner the most important work and the new discoveries concerning the following subjects; the constitution of the high molecular substances, properties of cellulose, alkali absorption of cellulose, nature of viscose and the cellulose copper compounds, the cellulose esters and ethers, work concerning hemicellulose and lignin, and the construction of the cell wall.—J. F. O.

The progress in colloid chemistry. Rudolph Larenz. Zellstoff Papier 12, No. 2: 62-64 (February, 1932).—Resume of the latest discoveries and technical progress. Among the topics more thoroughly discussed are, the hygroscopicity of woods, the swelling of cellulose, the nature of celluloids and their gelatinizing means, the construction and the properties of molecular colloids, especially cellulose, measurement of viscosity, etc.—J. F. O.

Abstract of the papers given at the general meeting of the technical committee of the German society of pulp and paper engineers, held at Berlin, Dec. 4, 5, 6, 1931. Zellstoff Papier 12, No. 1: 9-14 (Jan., 1932). "The relation of cellulose to the lignin in the wood. Chemical experiments have shown that cellulose is built up of very many equally bonded glucose remnants. The rontgen optical experiment shows a chain of 100 to 200 glucose remnants, 50 of such chains are united to a bundle, to the micell, which are 0.6 mm. thick and 6 mm. long in a magnification of 100,000. The morphology of the spruce fiber is also discussed. This article by Professor Freudenberg full of important facts. Concerning the plasticity of the micellar system, especially of cellulose, by H. Mark. In this paper a short review is given over our present knowledge of crystal plasticity and the plasticity of amorphous substances. Ultra violet absorption of lignin and compounds chemically related to it, by R. O. Herzog. The type of lignin from coniferous woods is more like the absorption spectrum which is obtained from bi-valent phenols. The heat balance of chlorine decomposition and bleaching by chlorine, by Herbert Rauchberg. It is of great interest chemically that the heat balance, calculated from chlorine, is more than twice as great with calcium hypochlorite bleaching as with chlorine gas bleaching and chlorine decomposition. Among the other papers given were, "Work and arrangement for a control laboratory in a paper mill or ground wood mill in order to make it useful," by Drechsel; "Division of rosin, ash and reducing substances in pulp boards," by Carl Schwalbe.—J. F. O.

Contribution to the knowledge of lignin from pine woods. B. Rassow and K. Wagner. Wochbl. Papierfabr. 63, No. 6: 103-106; No. 9: 161-164; No. 13: 243-246; No. 16: 303-305; No. 18: 342-344 (Feb. 6, 27, Mar. 26, Apr. 16, 30, 1932).—The difficulties of determining the formula of lignin are discussed, with references to the important work done up to the present date. The lignin obtained from pine wood by means of glycol hydrochloric acid has an average specific gravity of 1.362 and a molecular weight of 840. On the basis of refractometric results on glycol lignin in N/10 sodium hydroxide, solutions with more than 0.5 per cent lignin content are of colloidal nature, below this concentration the degree of dispersion increases to molecular division. The lignin content of a glycol solution can be determined by the colormetric method, providing that the concentration is between 0.01 to 0.05 per cent lignin.—J. F. O.

Concerning the precipitation and coloidal titration of lignin sulphonic acid with fuchsin. Theodor Hennig. Papier-Fabr. 30, No. 1: 14 (Jan., 1932).—Fuchsin forms a very insoluble condensation product with lignin sulphonic acid. A colloidal titration of lignin sulphonic acid is possible with fuchsin and other basic dyestuffs.—J. F. O.

The Relation of Sheet Properties and Fiber Properties In Paper*

IV. The Use of Structural Concepts in Pulp Evaluation and Paper Design

By R. H. Doughty[1]

Synopsis

The engineering concepts of sheet properties, for the investigation of which the joint TAPPI-APPA research fellowship was established, are explained and the work done is reviewed. Use of the results to permit more intelligent interpretation and application of pulp tests and to obtain accurate design and manufacture of papers is illustrated. The basic nature of the work in its attack upon the problems of precise and economical paper manufacture and as a foundation for continued study of these problems is discussed.

Introduction

As a survey of the literature will quickly show, a great deal of thought has been given to investigation of the properties of pulp and paper, and to evaluation of these materials. Thus far, however, the study has resulted solely in a mass of empirical procedures for evaluation in purely arbitrary terms; because of the restricted nature of their origin these procedures do not and can not satisfy pulp and paper makers and users. There is consequently a pressing need of evaluation methods, based upon a knowledge of fundamental engineering properties, by which pulps, stuffs, and papers can be evaluated accurately, rapidly, and in quantitative terms.

Such test methods would facilitate a precisely controlled study of the effects of separate material properties and process variables on the properties of the finished product. Mathematical laws relating material properties and product properties, through process variables, could then be set up. With such precise data available the proper raw materials and process conditions to produce a paper of specific properties could be selected at will. The general procedure would be strictly analagous to that involved in the development and application of the engineering science of structural design. Selection of the most suitable raw materials and control of process variables to give the desired predetermined effects should result in improved quality and uniformity of product and also economy in manufacture. With sufficient knowledge specifications could be written accurately and met exactly. Such results must be of interest and value to the entire pulp and paper industry and all related industries.

The fact that no means have hitherto been devised for producing such results can be ascribed first of all to the lack of a systematic and complete analysis of the properties of paper, which would have permitted work to be done on a sound fundamental basis. The earlier attempts along these lines have failed, apparently, because of the difficulty of analysing and expressing in precise terms the structure of sheets of paper built up as they are in a complex way from many small units.

A few years ago C. C. Heritage, at that time in charge of the Section of Pulp and Paper at the Forest Products Laboratory, made a systematic analysis *(7)* and from it developed an hypothesis that offered promise as a basis for further investigation. Accordingly a research project was initiated and has been financed for the past three years by the American Paper and Pulp Association and the Technical Association of the Pulp and Paper Industry as a joint research fellowship. The work, which has already been the basis of several publications *(2, 3,* and *4)*, has now progressed to the point where a complete and detailed illustration of its objectives and significance can be presented.

Objectives and Analysis of the Problem

The first objective of this study was to develop methods for the exact numerical evaluation of papers, of pulps and stuffs, and of the effects of process variables. The second objective was to develop methods for the design of papers. By the term "design of papers" is meant a logical and systematic procedure for predetermining, by simple calculation, the exact raw materials and processings necessary to produce a finished sheet that will possess exactly the desired properties—both qualitative and quantitative—to make it most suitable for a definite service. The close interrelation of these objectives, the results to be expected when they are attained, and the difficulties in the way of such attainment have been indicated in the introductory paragraphs of this report.

Considering a sheet of paper as a finished structure, it is evident that all properties of the sheet must derive from its dimensions, its structure, and the properties of the materials from which it is made. A further analysis along such lines led to the hypothesis on which this work was based. This hypothesis may be separated into the following four parts:

First, the structure of a sheet of paper depends upon the properties of the material of which it is made and also on the variables of the manufacturing process.

Second, the structural properties of a sheet depend upon the properties of the material of which it is made, as well as upon its own structure.

Third, the piece properties of any specified sheet of paper depend upon both its structural properties and its dimensions.

Fourth, the structure of a sheet of paper may be factored into two components, one the proportion by volume of the various materials (including air) in the sheet, and the other the arrangement of the materials. Structure may then be expressed in terms of volumetric composition and distribution and orientation of parts. For waterleaf sheets this reduces to solid fraction and fiber arrangement.

This scheme has a place for four distinct sets of paper properties. First are the sheet or *piece properties*, of which tensile strength in pounds per inch of width is an example. Second, each piece property is factored for dimensions, giving a general *structural property*, an example of which is strength in tension in pounds per square inch for a sheet of the particular structure in question. Third, each structural property is factored for solid

* To be presented at the fall meeting of the Technical Association of the Pulp and Paper Industry, Holyoke, Mass., September 14-16, 1932.
Contribution of the TAPPI Fundamental Research Committee.
[1] Member TAPPI, TAPPI-APPA fellow and assistant engineer, Forest Products Laboratory, Forest Service U. S. Department of Agriculture, Madison, Wis

fraction, giving a *formation property*, which is ideally the property of a solid mass of material having the same arrangement as that existing in the sheet tested. Fourth, the formation property is factored for arrangement, giving what is termed a *fiber property*, the property of a solid mass of material of some standard arrangement. With strength, this is not necessarily the absolute fiber strength.

The preceding hypothesis, if it is correct, permits comparison of fibers in like conditions. Variations in the properties of papers can then be identified as arising from variations in the fibers themselves or in the sheet structure. Further, if variations in structure are found, whether these are due to variations in material or in manufacture can be demonstrated. Finally, recommendations can be made as to whether to change materials or manufacturing variables in order to attain a desired result, and specifically which ones, in what way, and to what extent.

The first three parts of the hypothesis just expressed are the basic principles that have given direction to the three primary phases of this fellowship study. The first part states that raw materials and process variables determine the structure of a sheet, the second, that raw materials and structure determine the physical attributes of the sheet, and the third, that the general physical attributes and the piece dimensions determine the properties of any specific piece.

Some means of measuring and quantitatively expressing structure are necessary if research is to be undertaken along the lines of these basic principles. This is furnished by the fourth member of the hypothesis, which divides structure into two components, one of which may be simply and directly measured, while means of controlling and measuring the other should not be difficult to devise.

The working of the three basic principles can be illustrated by means of representative data drawn from the various publications and progress reports on this work. The applications of sheet-design concepts involve the use of some mathematical relations; the derivation and significance of these relations will be indicated briefly. A short review of the materials used and the methods of the work is also necessary.

EXPERIMENTAL PROCEDURE

Methods and Materials Used

The methods used in this work have been reported in detail elsewhere *(2)*. In brief, sets of waterleaf test sheets of the material under investigation were pressed between blotters at different pressures to obtain a range of solid-fraction values in the dry sheets. The pressures and the resultant solid-fraction values varied widely with both the pulp and the processing; the maximum range in pressure was from 2 up to 10,000 pounds per square inch. After pressing the sheets were dried under slight lateral tension between the same blotters with which they had been pressed. Strength tests were made, thickness and sheet weight determined, and the final results computed from these figures.

Since the strength properties of paper are those of the most wide and general importance, the studies up to the present have been restricted mainly to them, and in addition have been further restricted largely to tensile strength, because this is the simplest to determine in fundamental units. The tensile strength is also a component of the more complex bursting, folding, and tearing strengths: these must eventually be analyzed in terms of their simple components. Though the work has been done chiefly with tensile strength, application of the principles on which it is based can produce equally valuable results with other strengths and other properties, as will be shown.

The materials now include 45 pulps and stuffs. Some were of commercial origin, but most were made and processed at the Laboratory so that their history is known. Not all are discussed in detail here.

TABLE 2

PEBBLE-MILL STRENGTH-DEVELOPMENT DATA FOR THE UNBEATEN PULPS OF TABLE 1

Sample No.	Processing time Minutes	Bursting strength Pts./lb./ream	Tearing strength Gms./lb./ream	Folding endurance Double folds	Breaking length Meters
17	0	0.12	0.69	2	1110
	20	.36	1.32	9	2310
	40	.58	1.39	33	2980
	60	.62	1.46	76	2980
	80	.64	1.55	110	2960
27a	0	.21	1.68	3	1500
	20	.61	2.60	100	3120
	40	.93	2.40	530	3130
	60	1.05	2.09	820	4330
	80	1.10	2.01	1470	5030
37	20	.40	1.83	13	2160
	40	.60	1.87	56	2740
	60	.66	1.88	160	2930
	80	.63	1.60	250	3400
40	20	1.00	1.74	1230	5000
	40	1.18	1.43	1310	5340
	60	1.25	1.39	1280	5500
	80	1.21	1.36	1220	5000
41c	20	.42	1.71	21	2130
	40	.68	1.83	43	2830
	60	.69	1.68	180	3630
	80	.80	1.58	290	3790

TABLE 1.—RAW MATERIALS, PROCESSING, AND STRENGTH DATA

Sample No.	Source and Type of Pulp [1]	Processing Conditions: Equipment	Time Min.	Freeness (Green) Cc.	Forming Conditions: Consistence Per cent	Basis weight Pounds	Basic Strength Constants: Strength decrement m	Formation strength $b \times 10^{-3}$	Fiber strength $k \times 10^{-3}$
17	Black gum sulphite, unbeaten	.....	...	...	0.019	52	2.38	18.6	8.0
27a	Spruce sulphite, unbeaten	.....	...	680	.017	45	2.05	23.6	11.7
29	Pulp 27a, beaten	25-lb. beater	60	550	.018	48	1.78	25.7	13.0
30	Pulp 27a, beaten	25-lb. beater	150	270	.019	50	1.82	26.0	13.2
31	Pulp 27a, beaten	25-lb. beater	240	85	.06	43	1.76	22.2	13.6
32	Pulp 27a, beaten	10-lb. stone roll beater	240	0	.16	49	1.76	18.0	13.0
37	Spruce sulphite, unbeaten	.....	...	...	.018	47	2.16	25.0	12.5
38	Pulp 37, air dried and repulped	.....	...	...	.018	47	2.50	13.5	7.0
40a	Spruce sulphite, unbeaten	.....	...	...	.016	40	1.87	27.9	14.0
40b	Spruce sulphite, unbeaten	.....	...	...	.032	80	1.87	25.0	14.0
40c	Spruce sulphite, unbeaten	.....	...	...	.060	150	1.87	22.5	14.0
40d	Spruce sulphite, unbeaten	.....	...	...	.008	20	2.36	62.0	24.0
40e	Spruce sulphite, unbeaten	.....	...	...	.022	55	1.87	26.5	14.0
40f	Spruce sulphite, unbeaten	.....	...	...	.048	120	1.87	24.2	14.0
41a	60-mesh and finer fraction from unbeaten spruce sulphite sample 41c	.....	...	50	.100	34	2.50	14.0	10.0

[1] All pulps recorded in this table were made at the Forest Products Laboratory.

DISCUSSION OF RESULTS

The First Relation; Materials and Machine Processing Produce a Structure

When a sheet is pressed and subsequently dried, a variety of compression, expansion, and shrinkage phenomena combine to produce a definite density of structure in the finished sheet. The conditions of pressing and drying, of course, will affect the properties of the structure, and the nature of the fibers and their arrangement also play a part. The arrangement has been found to depend, to some extent, on stock consistence *(3)*, which is a sheet-forming variable.

The effect of all these factors on the net behavior of pulp mats during pressing and drying is shown in Figs. 1 and 2. The reference numbers on the curves correspond to the sample numbers in Tables 1 and 2. Fig. 1 illustrates the behavior of unbeaten pulps of several types, of stuffs at different degrees of beating, and of fine particles separated from one unbeaten pulp. The curves of Fig. 2 illustrate the behavior of an unbeaten pulp formed into sheets of several basis weights from stocks of correspondingly different consistences. It must be emphasized that this behavior is not a *weight* effect but a *consistence* effect. The data are reported in terms of basis weight, since the writer in common with many others thought when initiating this particular piece of work that weight was the controlling factor, and prepared the test sheets with this in mind.

The figures show how the density—the solid fraction value—of the finished sheet can be controlled at will by proper selection of stuff and of processing conditions. Other things being equal:

(1) The greater the pressure in the wet condition the denser is the finished sheet.

(2) The smaller the fiber particle size the denser is the finished sheet.

(3) The greater the consistence of the stock from which the sheet is made, the denser is the finished sheet.

Sheet density also appears to be affected to a small extent by some pulp properties the nature of which is not now definitely known.

No simple mathematical expression fits the relation between wet-pressing pressure and solid-fraction value of the dry sheet. This is hardly surprising, in view of the number of intermediate factors entering into the final relation. Much of the data, however, can be approximated by the equation:

$$(1 - 1.3b^{0.08})\ kP^m + 1.60b^{0.08} = V_d$$

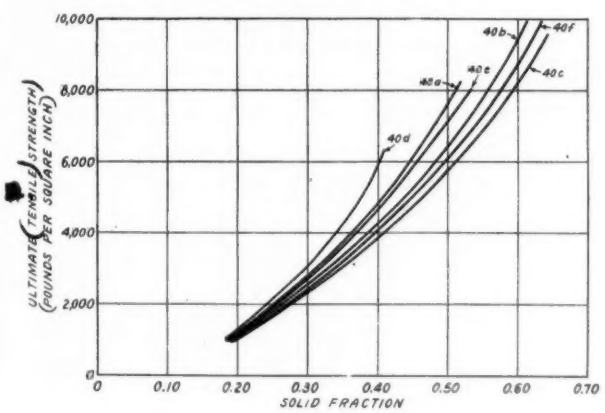

FIG. 2.

The effect of sheet structure on the relation of solid fraction to pressure of wet pressing.

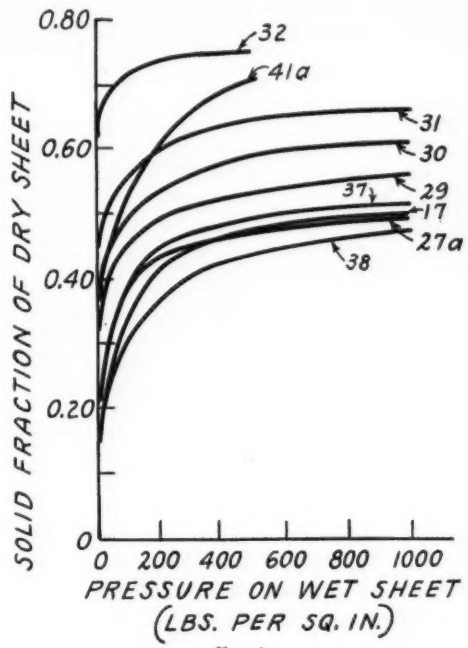

FIG. 1.

The effect of pulp properties on the relation of solid fraction to pressure of wet pressing.

which is derived from an analysis of pressure and shrinkage data. In this equation

P = wet-pressing pressure
k = intercept of the logarithmic straight line $V_w = kP^m$
m = slope of that line
V_w = reciprocal of the solid-fraction value of the wet sheet
V_d = reciprocal of the solid-fraction value of the dry sheet
b = a constant of the rate of flow equation *(1a)*[2].

This equation serves merely to point the way for further study; it neglects, in particular, the effects of consistence

[2] The change with time t of the rate of flow R of water under constant head through a pulp mat is given by the equation

$$t + c = A \times 10^{-bR}$$

in which c, A and b are empirical constants.

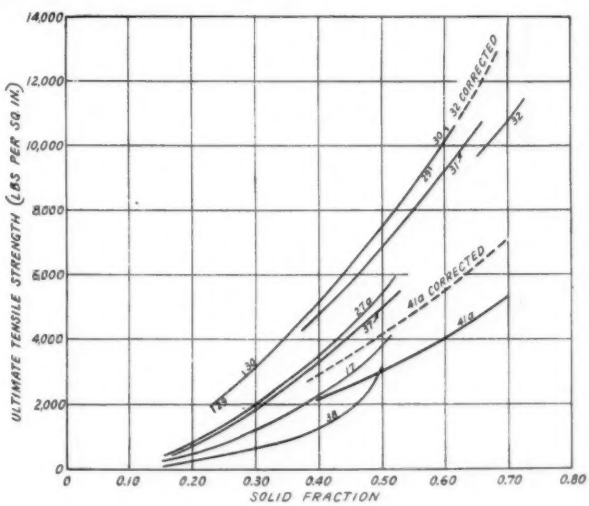

FIG. 3.

The effect of pulp properties on the relation of tensile strength to solid fraction.

or basis weight variations. For present purposes it may be replaced by the simple logarithmic straight line

$$F = qP^r \qquad (2)$$

which can be set up from a determination of the solid-fraction values (F) of sheets made at two or three pressures. This will serve in the later illustrations of sheet design. Equation (1) is interesting especially as showing how diverse properties of pulp sheets may eventually be evaluated from rapid tests made on a mat or a suspension of the wet pulp.

The Second Relation; Structure and Materials Produce A Set of Properties

A sheet of solid fraction equal to unity would develop a certain strength, which would depend on the form and arrangement of the fibers and either on their bonding power or their ultimate strength. At any lower solid fraction the area of interfiber contact must be less and, if generally accepted ideas on the bonding of the particles are correct, the strength of the structure must therefore decrease. Hence the relation of strength to solid fraction would probably be some complex function of fiber dimensions, adhering power, and arrangement. Other properties may be considered in this same manner. An especially clear and careful discussion of the factors entering here, as well as of those that condition the relation of structure to fiber properties, has been given by Campbell *(1)*.

Tensile Strength

The ultimate structural strengths in tension of paper sheets are plotted against their solid-fraction values, in Fig. 3, for a variety of raw materials. The same plotting is made in Fig. 4 for one material at several basis weights. The samples are the same as those of Figs. 1 and 2 and Table 1.

The dotted curves of Fig. 3 have been corrected for consistence variation in forming; comparison of them with the corresponding solid curves shows the magnitude of this correction. Curve 31, if thus corrected, would practically coincide with curves 29 and 30 uncorrected and 32 corrected.

In Fig. 3, curves 29, 30, 31 and 32 indicate that there is no increase in the strength of sheets at constant solid fraction after a slight beater treatment, though there is considerable increase early in the processing, as curves 27a and 29 show. Drying has an effect opposite that of light beating as shown by a comparison of curves 37 and 38. Comparison with Fig. 1 shows that the "strength development" of pulps is in large part due to the production of a

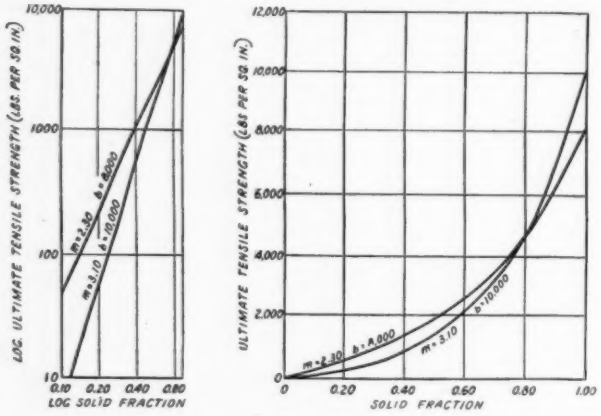

FIG. 5.
The dependence of tensile strength on the formation strength (b) and strength decrement (m).

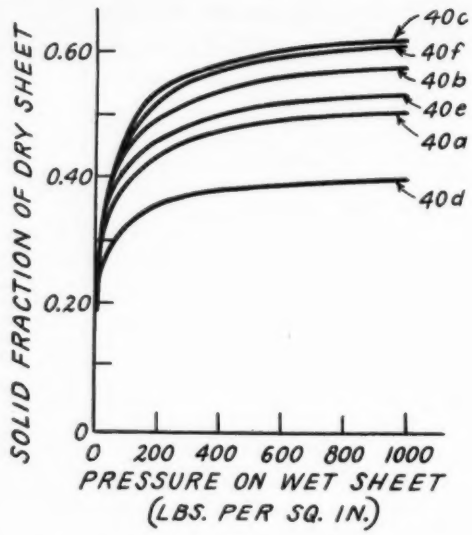

FIG. 4.
The effect of sheet structure on the relation of tensile strength to solid fraction.

denser sheet, rather than to any change in the strength properties of the material (*2*).

Change of consistence of the stock from which the sheet is formed apparently causes a change in the arrangement of the fibers in the sheet. This in turn has a considerable effect upon the strength and solid-fraction values of the sheet. Figs. 2 and 4 show that sheets of higher weight (made from stock of higher consistence) are weaker when made of the same solid fraction but are denser when made at the same wet pressure. When strength is plotted against weight for sheets of several weights (forming consistences) made under one wet pressure, curves with maxima are produced, a behavior that has been discussed in detail in a previous report (*3*) of this series.

The curves of Fig. 3 compare several unbeaten pulps (17, 27a, 37), which were formed into sheets in the fresh state, and show also the relation between strength and size of the fiber particle. This relation is brought out by curve 41a, for the fine fraction of a pulp very similar in nature to that of curve 37. The significance of these curves will appear from the following paragraphs on the mathematics of the curves, and their use in the later sections on pulp evaluation and sheet design.

Mathematical Treatment

No mathematical treatment so far devised to relate the strength and solid-fraction data has proved entirely satisfactory. As an approximation equation, however, the function

$$S = kF^mC^{-n} \qquad (3)$$

has worked very well. This is compounded from the equation

$$S = bF^m \qquad (4)$$

of the strength-solid fraction curves, and the forming consistence equation

$$b = kC^{-n} \qquad (5)$$

The various symbols have the following significance in these equations:

S = structural strength in tension
F = solid-fraction value
b = formation strength
k = fiber strength
C = consistence
m = slope of the logarithmic formation strength

solid fraction curve, here termed "strength decrement"

n = slope of the logarithmic formation strength-consistence curve, termed "consistence constant"

One characteristic of these equations is that a pulp with a high *formation strength* and a large *strength decrement* (27a, Table 1 and Fig. 3) may actually be weaker over a great part of the experimental solid-fraction range than one in which both constants are small (31, Fig. 3). How this can happen is illustrated in Fig. 5.

The constants of equation (3) can be determined simply enough by tests on sheets made at two or three pressures, and a knowledge of the consistence equation of the machine used. Eventually they may be determined in some more rapid way, as suggested in connection with the solid fraction-pressure curves. Eventually, too, equations more nearly basically correct will no doubt be found.

Properties Other Than Tensile Strength

Properties other than tensile strength have been investigated in a preliminary way only. Although no attempt at an exhaustive study or a detailed analysis of the data has been made, certain very interesting qualitative facts can be shown.

Strengths

The tensile, bursting, and tearing strengths, the folding endurance, and the breaking length of an unbeaten spruce sulphite pulp are plotted as functions of solid fraction in Fig. 6, which may be compared with the corresponding strength development curves, in Fig. 7, of sheets made from the same pulp after it had been processed in a pebble mill. Since thickness values were not determined in the pebble-mill test, no values of solid fraction or tensile strength can be recorded for these sheets.

The maximum strength developed by pressing is about as high as that developed by milling, for bursting, folds, and breaking length, and higher for tear. The bursting associated with maximum tearing strength, however, is lower in Fig. 6 than in Fig. 7, and vice versa. Fig. 8 brings out the fact that the maximum in tearing strength, covering as it does an extremely narrow pressure range, is very susceptible to variation in pressure.

Porosity

The air transmission values for a number of sheets are plotted against solid fraction in Fig. 9, on semi-logarithmic coordinates *(4)*. The two screen fractions may be considered as corresponding to an unbeaten and a highly beaten pulp, since no data on the simultaneous effect of beating on porosity and solid fraction are as yet available. It is evident that porosity decreases rapidly with increasing solid fraction. Also, the porosity is very much less, at the same solid fraction, for the short-fibered than for the long-fibered material.

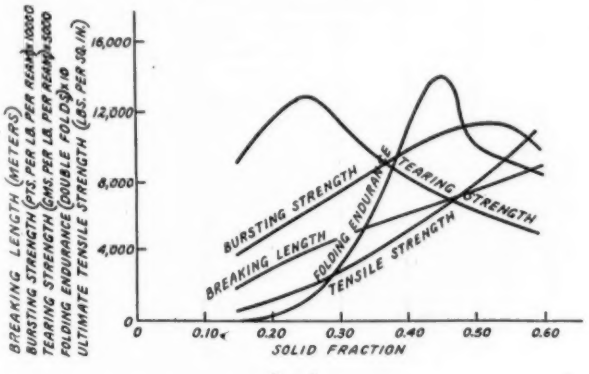

Fig. 6.

The variation of several strengths with solid fraction.

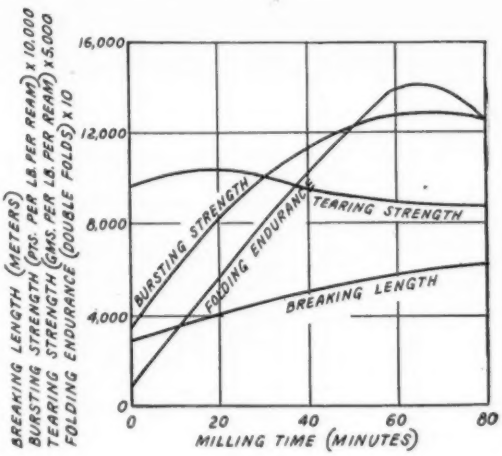

Fig. 7.

Pebble-mill strength-development curves for the pulp of Figs. 6 and 8.

Similar data for sheets of unbeaten pulp at several weights indicate that air transmisison (porosity) is practically independent of ream weight at solid fractions higher than 0.40. This can be explained on the basis of differences in the internal structure of the sheets.

Appearance

Color and opacity are two of the important appearance properties of sheets; luminosity and contrast ratio, respectively, measure these properties. The way in which color varies with solid fraction is shown in Fig. 10. A comparison with the relation of solid fraction at constant pressure on the wet sheet to degree of beater processing (Fig. 1 and Table 1) suggests how the color of a sheet may vary with beating of the pulp. The variation of opacity, both with solid fraction and with beater treatment, is shown in Fig. 11. The form of the opacity curves and the effect of beater processing upon them are points of especial interest *(8)*. From the nature of the methods of determination, color and opacity are related to a considerable degree, which fact must be considered in any attempt to analyze the curves of Figs. 10 and 11. The form of the opacity curves occurs naturally, since a sheet of zero solid fraction is composed of air which is transparent, while one of unit solid fraction is composed of solid cellulose which according to the best evidence is also transparent. The opacity depends on the number of reflecting surfaces in unit thickness of sheet, which

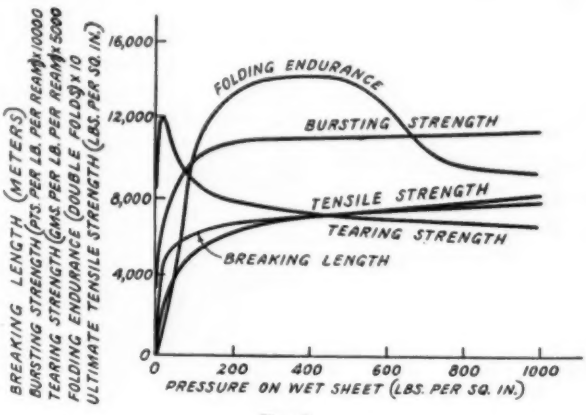

Fig. 8.

The variation of several strengths with wet pressing pressure.

must pass through a maximum at some critical density *(1)*.

The Third Relation; Structural Properties and Dimensions Give Piece Properties

The tensile-strength data so far discussed are presented on a unit cross-section basis of pounds per square inch. The opacity data have been reduced to a constant-weight basis, indicating the characteristic property per unit of material. This is also approximately true of the other property data shown.

Both the maker and the user of paper are primarily interested in such piece properties. The user requires a sheet to withstand, for example, a certain tensile load per inch of width. He may specify at the same time entirely incompatible limits of weight and thickness for the sheet. The paper maker is interested in knowing and developing the maximum strength per unit of material used, not per unit of width or area. He must know how to get the maximum sheetage, within the required limits of weight or density, thickness, and strength.

These are problems of manufacturing economics, and they are also problems that can be handled especially well by the methods here proposed. The details will be presented in the later section on sheet design.

Pulp Evaluation

The results of the fellowship work can be applied in the interpretation of the results of the present empirical pulp tests. They also show how new, exact, and rapid methods of evaluation may perhaps be developed. Some of these applications can be indicated here; a study of the preceding sections will suggest others.

A great deal of work has been done by various researchers to develop an initial strength test for pulp. Ideally, such a test would give a rapid measure of the strength-producing properties of a pulp, without recourse to elaborate processing methods. The initial strength test as now applied, however, does not successfully classify all pulps in the same order as does a beating test *(6)*. A reason for this may be found in the neglect of the solid-fraction values of the test sheets.

Test sheets from two samples of unbeaten pulp tested in the fellowship work, for example, gave tensile strengths of 1800 and 1400 pounds per square inch (breaking lengths of 3000 and 2700 meters). These sheets were made under identical conditions, and pressed, while wet, at 20 pounds per square inch. Maximum bursting strength development values were 1.02 and 1.10 points per pound per ream, respectively, or just the reverse of the initial test. The calculated 60-minute beater values *(5)* of the two pulps were identical. The solid-fraction values of the two sets of sheets from the unbeaten samples were 0.29 and 0.24, which is an important difference. Correction for this difference in solid fraction resulted in a change of the tensile ratio from 1800/1400 to 1900/2000, and of the breaking-length ratio from 3000/2700 to 3000/3100. In other words, a correction of the tensile strength for variation in solid fraction was sufficient to rearrange these two pulps on a scale of merit.

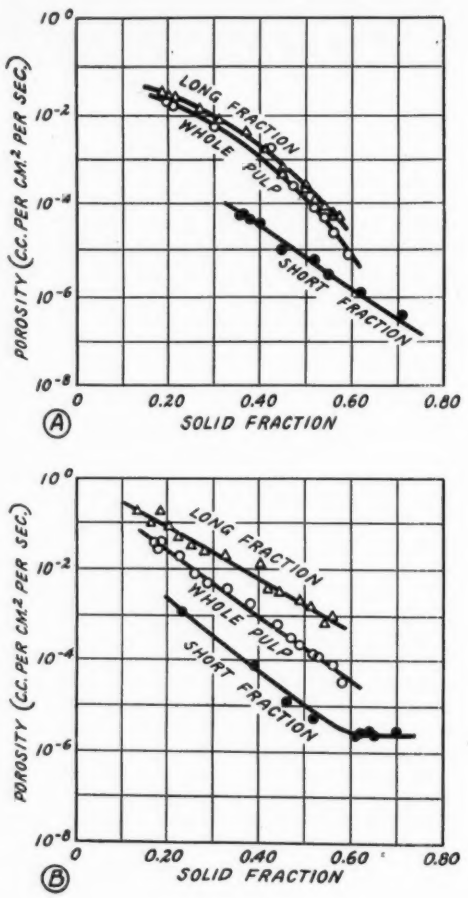

FIG. 9.
The dependence of rate of air transmission on solid fraction and fiber properties for (A) spruce and (B) black gum sulphite pulps.

A correction for solid fraction, such as the one required for these two pulps, can be made readily, but the method, of which a detailed description need not be given here, is different for different classes of pulps. For example, dried, fresh slush, and beaten pulps require quite different correction charts. The use of the *fiber strength* and *strength decrement* values, though somewhat more difficult, is a more precise method, and apparently applicable to any pulp at any degree of beating. Before

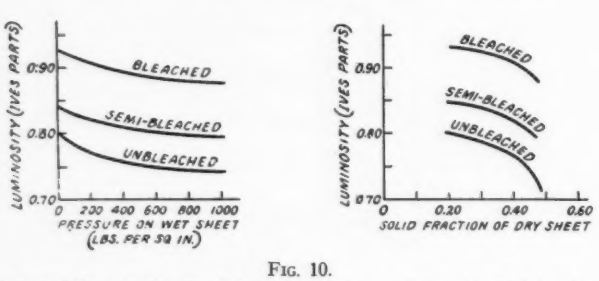

FIG. 10.
The variation of color (total Luminosity) of test sheets with solid fraction and with pressure of wet pressing for several pulps.

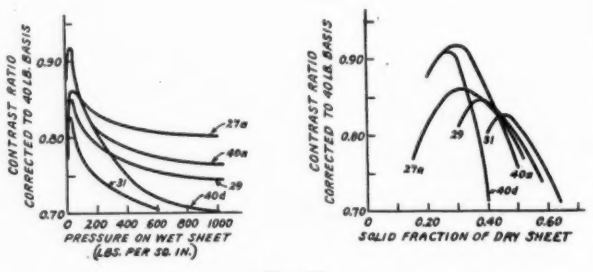

FIG. 11.
The effect of sheet structure and pulp properties on the variation of contrast ratio with solid fraction and with wet-pressing pressure.

this method can be generally recommended, much more investigation, especially of the forming consistence effect, is required, but an illustration on the basis of present knowledge is of interest.

Tests of sheets made under two pressures, say 20 and 200 pounds per square inch, serve to establish the logarithmic straight line of equation (4). The slope m of this line is the strength decrement, and the intercept b at $F = 1$ is the formation strength. Knowing the characteristic consistence equation (5) of the sheet-making apparatus, the fiber strength k is readily found, most simply by graphical means.

These fiber strength values have been compared with the maximum developed bursting strengths and the beater values have been calculated in accordance with the methods of both Gephart and Harrison, for the various pulps used in this work. The correlation between the several sets of values is such as to indicate that the *fiber strength* will serve as well to characterize a pulp as will any of the single constants proposed by other workers.

During beating, the fiber strength shows a small but rapid increase from that of the unbeaten stock up to a constant value (compare pulps 27a to 32, Table 1). Some slight processing before testing might serve to render the fiber strength an accurate index of quality. This possibility has not so far been investigated, but seems to deserve consideration. The strength decrement m should also have some significance in respect to pulp quality, but just what is not now known.

Eventually, as earlier suggested, some means of evaluating these constants, independent of test sheets, may be found. It is hardly possible that they can be related to any physical properties of the wet mat, in the way that the constants of the solid fraction-pressure equation (1) are related to the flow-rate constants. Any conceivable external physical properties of the fibers will change during beating, whereas k is practically constant. It appears to measure in part a fiber-adherence characteristic, and so might be related to some adsorption measurement. This is an interesting field for speculation and investigation.

This fellowship work also throws some new light upon the effect of the variables of the sheet-making procedure on the quality of test sheets. For example, it appears that to obtain concordant results consistence, drainage rate, and the conditions of couching, pressing, and drying must be rigorously specified. That is, the actual conditions set up in the sheet rather than any specific form of apparatus are of prime importance. Again, the effects of changes in these variables may be different for different pulps and stuffs. Thus a procedure could show excellent correlation between test and operating results with one type of pulp where with a different type of pulp the correlation might fail entirely. Also, it is hardly possible to use exactly the same procedure with, for instance, an unbeaten and a highly beaten stuff. Without a knowledge of the effect of fiber properties and of process variables upon sheet structure, and thence on other sheet characteristics, it is difficult to tell just what certain test results may mean. Such detailed knowledge of properties and variables offers the only safe road to a solution of many of our testing difficulties.

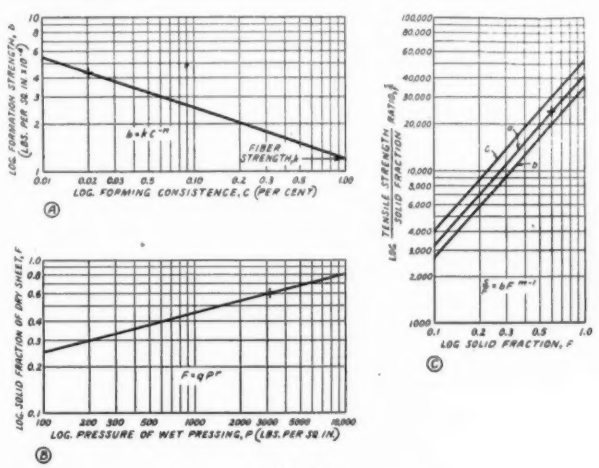

FIG. 12.
Basic strength and pressure curves for sheet design.

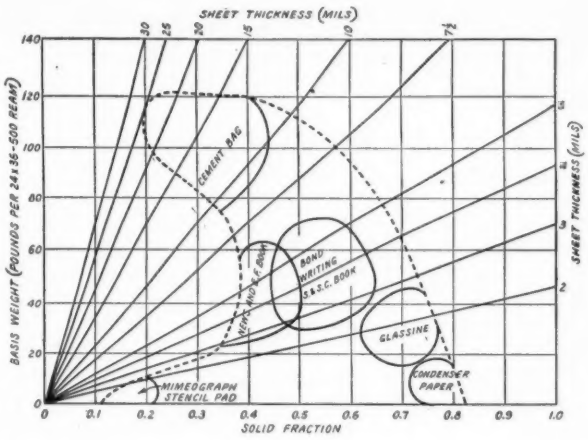

FIG. 14.
The present approximate range in weight, thickness, and solid fraction of commercial papers.

Sheet Design

The examples already given show how combinations of beater processing and pressing may be used to control sheet properties. In the present state of this study few quantitative rules can be given, but the qualitative relations are fairly obvious.

For example, to make a strong sheet of maximum porosity, high pressure on an unbeaten or slightly beaten pulp can be recommended. A strong, nonporous sheet, on the other hand, can best be produced by low pressure on sheets of a highly beaten stuff.

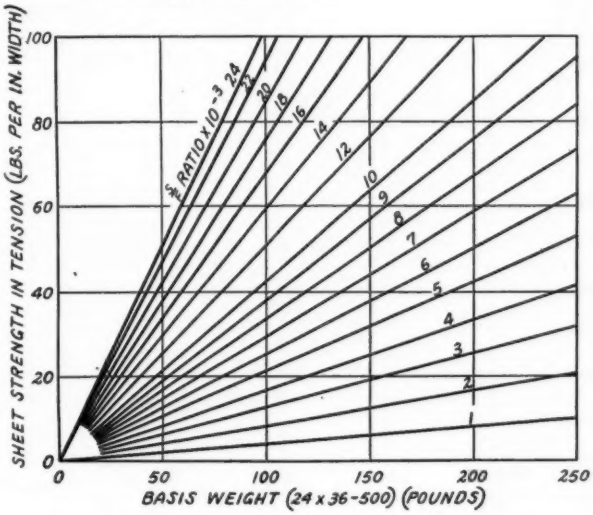

FIG. 13.
Sheet strength-sheet weight-tensile strength-solid fraction chart for use in sheet design.

The curves of Figs. 6, 7, and 8 seem to indicate that by no combination of pressing and beating can the tearing and bursting or tensile characteristics of a sheet be simultaneously developed to a maximum. This may be a disappointment to those who want to make an all-use sheet. The only recourse for them is a careful study of the tearing strength, to determine the controlling factors therein, followed by development of means to impart the necessary properties to fibers, or a different selection of materials.

Precise methods of sheet design, for all properties, is the ultimate aim of these researches. How such methods can be utilized can be illustrated, using the tensile-strength test. The curves of Fig. 12, derived from equations 2, 4 and 5, and of Fig. 13, are required for this procedure.

A pulp or stuff prepared for the paper machine is completely specified as to tensile strength by its k and m values, and by its equation of solid fraction as a function of wet-pressing pressure. Fig. 13 expresses the relation of the *piece property* of pounds tensile strength per inch width of sheet to basis weight (24 x 36 — 500) of the sheet for numerous values of the S/F ratio. This ratio, it may be added, is related to the breaking length value in meters *(3)* as

$$\text{Breaking length} = K\ S/F$$

The value of the constant K, which depends upon the particular ream size used, is 0.4689 in this instance.

The graphs permit determination of the solid fraction required to give a desired sheet strength and the pressure necessary to produce that solid fraction, using any forming consistence. The curves of Fig. 12 may be drawn for any pulp as well as for the one selected for this demonstration; only the characteristic constants need be known. The illustrations apply exactly only to the test-sheet machine, and must be limited to that machine until accurate data on paper-machine operation are collected. They are, however, very suggestive, needing in addition only the suggestion that the percentage change of strength brought about by going, for example, from 0.3 to 0.5 per cent consistence is the same as that between 0.03 and 0.05 per cent.

Assume, for instance, that a sheet of the lowest possible weight is desired to support a load of 100 pounds per inch width in tension, from a pulp having a fiber strength of 12,000 pounds per square inch and a strength decrement value of 2.12 (the one illustrated). Further suppose that the constant n of the equipment available is one-third, that the minimum usable consistence is 0.02 per cent, and that because of other properties (opacity or porosity or tearing strength, perhaps) the solid fraction must not go higher than 0.60.

From Fig. 12, A, the formation strength of this pulp at 0.02 per cent consistence is 43,000 pounds per square inch. This gives the upper intercept of curve 12, C, a, which is drawn to a slope of 1.12, or $m - 1$, thus giving the S/F values directly. When $F = 0.60$, this curve shows $S/F = 24{,}000$. Reference to Fig. 13 now shows that a basis weight of 100 pounds will give a slight margin of safety. Fig. 12, B, shows that a wet pressure of something more than 3,000 pounds per square inch would be required to make this sheet from this pulp.

Again, suppose that the same conditions apply except that the wet-pressing pressure is limited to 200 pounds, and that it is desired to know the strength attainable in a 40-pound sheet made at 0.02 per cent consistence. The maximum solid fraction attainable is now 0.30, giving an S/F of 11,000 and a sheet strength of 18 pounds per inch. If 15 pounds strength would be sufficient in the 40-pound sheet, the consistence might be raised to 0.03 per cent, still using the same pressure ($S/F = 9{,}000$, curve 12 C, b) or at the 0.02 per cent consistence the pressure might be dropped to 100 pounds per square inch (corresponding to $F = 0.25$, $S/F = 9{,}000$, curve 12, C, a). If on the other hand it was required to make a sheet of 24 pounds per inch strength and 40 pounds weight ($S/F = 14{,}000$), it would be necessary either to reduce the consistence to 0.01 per cent (fig. 12, C, c and A), to raise the pressure to 500 pounds per square inch (fig. 12, C, a and B), to process the pulp so that a higher solid fraction could be obtained with a lower pressure, or to select a different pulp.

These computations are not excessively complex, when it is considered that by their aid the exact conditions to produce a prescribed sheet can be definitely set once and for all. Further, as knowledge of the paper-making process is advanced they may be simplified and made more precise than at present. Not only single pulps and water-leaf sheets but also mixtures of stuffs and complex furnishes should be susceptible to simple and exact treatment in this manner, once the laws governing their behavior are understood.

The range of solid fraction, thickness, and ream weight values covered by present commercial papers is of interest in connection with sheet design, since it indicates what is considered essential at present.

The relation

$$W/t \times 0.0427 = F \qquad (7)$$

states that for one basis weight of sheet (W) and one thickness (t) there can be but one solid fraction, for a given fibrous material. This is illustrated by the three-variable plot of Fig. 14. Obviously, for a sheet containing much filler of high specific gravity, the solid fraction associated with a given weight and thickness will be lower than for a sheet composed entirely of less dense material. Superimposed on Fig. 14 are sketched roughly the areas occupied by a number of commercial grades of paper, based on tests made on samples received at the Forest Products Laboratory from time to time, and on other sources of information. These serve to give a rough idea of the categorical relation of the sheet characteristics of paper to solid-fraction values.

Extension and Consolidation

Many ways in which these preliminary researches can and must be extended to attain their full value have been indicated throughout this report. These ways include such diverse matters as the development of a mathematical theory of the relation of sheet properties, through structure, to fiber properties, analysis of pressure and shrinkage phenomena, exact measurement of three-dimensional fiber orientation in sheets, analysis of the complex strength properties of sheets in terms of their simple components, and development of precise measures for the fundamental properties of fibrous raw materials. With the work here recorded as a basis, this becomes a very fertile field for study. The facts so far collected may be open to interpretations slightly different from those now given them, but the basic concepts of material and structure properties can be accepted as definitely proven. These concepts are powerful tools available for research and development in the improvement of quality and precision in preparing stuffs and producing papers.

LITERATURE CITED

[1] Campbell, W. B. Pulp Paper Mag. Canada *32*, 172-5, 206, (1932). Forest Prod. Lab. Canada, Quarterly Review *No. 10*, 1-13, April-June, 1932.
[1a] Carpenter, L. A. and Schafer, E. R. Paper Trade J. *91*, No. 3, 57-60 (July 17, 1930).
[2] Doughty, R. H. Paper Trade J. *93*, 15-20 T. S. (July 9, 1931).
[3] Doughty, R. H. Paper Trade J. *93*, 161-7, 172 T. S. (October 8, 1931).
[4] Doughty, R. H. Paper Trade J. *94*, 114-19 T. S. (Mar. 3, 1932).
[5] Gephart, O. P. Paper Trade J. *91*, No. 1, 52-3 (July 2, 1930). Harrison, H. A. Worlds Paper Trade Rev. *94*, 1988-94, 2060-6, 2104-10 (1930).
[6] Hall, G. A. C. A. *23*, 5581.
[7] Heritage, C. C. Tech. Assoc. Papers XIII, 21-3 (1930).
[8] Jenkins, F. Proc. Tech. Sect. Paper Makers Assoc. G. Brit. Ireland. *5*, 50-62 (1924); C. A. *18*, 1570.

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The Economic Security of Wage Workers*

A Plan for Coordinating the Interests of Employees, Employers, and Society in Employment Stabilization

By John R. Hall[1]

Existence includes certain primary physical hazards which are more or less certain to confront every individual at some time in his life in the form of a serious emergency. These primary hazards may be grouped into four general classifications; namely, temporary disability, permanent disability, death, and old age dependency.

To a considerable degree the occurrence of these hazards is neither avoidable in point of fact nor predictable in point of time. Each may involve severe hardship to the individual and/or his dependents; a hardship which strikes in a two-fold manner entirely apart from and in addition to the mental or physical suffering and loss of self-respect and confidence which it may entail.

The incidence of any one of these hazards may not only deprive the individual, among other things, of income derived from wages gained by his labor but may also, and at the same time, heavily impair or completely absorb the reserve income or capital, or both, which he may have succeeded in accumulating from these wages by sacrifice, self-control and patient saving for many years.

While it may be impossible to prevent occurrence of any one of these contingencies, it is possible through adequate advance provision to mitigate, or avoid, the ill financial effects which follow in its wake. And to overcome, or to attempt to overcome, the ill financial effects of these risks in the case of the individual workers is to take the first step toward placing both the business and the social organization on a foundation capable of supporting a peaceful, advancing civilization.

Satisfactory methods and instrumentalities have been developed which enable us to overcome the injurious effects of each and every one of these primary physical hazards.

But largely by virtue of institutions which man himself has created, the vast majority of human being are especially exposed to danger from another hazard which grows more sinister in its varied aspects as science develops new products and processes of production and hastens the advent of change.

This hazard is that of unemployment.

The four primary physical hazards of existence—which fall peculiarly within the province of nature's workings—impose risks on every individual alike, not only on the worker, but also on the capitalist and on the proprietor who, however, are more or less in control of their own material well being. The hazard of unemployment, on the other hand, is especially disastrous to the man who works for wages—whose livelihood is dependent upon the thoughts and acts of capitalists and proprietors, upon factors over which the wage worker himself exercises little or no effective control.

As in the case of the primary physical hazards of life, so does unemployment (unless safeguarded) work with double strength on the well being of the wage worker to injure and destroy both his earning capacity and his financial reserves; but the effect of unemployment is much more devastating in that it tends to injure and destroy some of the most priceless of all man's possessions—his confidence in himself, his hope of attaining economic security in the future by his own efforts, and his loyalty to the social organization of which he is a unit.

The risk of unemployment seems to be more susceptible to control than are the primary hazards of life, even though at present it appears to be less predictable as to occurrence, extent, or duration, and more difficult to safeguard.

However, in spite of these conditions there are both methods and instrumentalities at hand by which protection from the fickle hazard of unemployment can be measurably assured to those dependent on wages.

Because all the risks which I have mentioned are present, in the life of a wage worker, and because each of them is capable by itself of exercising a disastrous influence on his economic life, the wage worker can attain certain economic security only by protecting himself from the ill financial effects, not of some of these hazards but of all of them.

Thus economic security for the wage worker requires a definite, comprehensive financial program to cover all these hazards—and no one who is without such a program is economically secure.

The advantages of this protection to the individual, to society in general and to business are very evident. It benefits the individual by reducing actual suffering. It re-

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leases him in some degree from fear and worry of anticipated distress, thus tending to promote a healthier, happier state of mind which in itself reduces hazard. It removes one form of limitation and to that extent enables the individual to take better advantage of the opportunities which his circumstances may provide.

From a social standpoint, protection represents probably the least that could be expected from a civilized society, since even primitive societies have offered some measure of protection in caring for the helpless and aged. Full material security and full opportunity for the individual to advance mentally and spiritually may well constitute society's ideal. Science has made the attainment of this ideal actually possible to all for the first time in history.

From the standpoint of those who direct industry, that is, capital and management, the economic security of the worker is as important a consideration as any with which they have to deal. In the past this fact has received too little recognition. The worker has been looked upon, perhaps naturally, more as a factor of production than as a factor of consumption. Only in recent years have the first practical signs of a proper regard for the worker's place in relation to general prosperity and welfare come into view.

It is often truthfully said that "the consumer is king." In industry organized to the status of mass production, the worker is this consumer. Hence the necessity of providing him with a measure of economic security, or stability, in order that industry itself may be stabilized.

Human economic activity may be likened to a triangle, the three sides of which are production, distribution and consumption. The base upon which this triangle rests is consumption. Business leaders have in the past concentrated on two of the sides—production and distribution—whereas stability depends on the breadth and strength of the base—consumption—and this has been largely ignored.

Our hope for the future will depend on ability to make the base of the business triangle solid—on stability of consumption. And stabilized consumption, stabilized buying power, stabilized business, minimized cycles of alternate activity and stagnation, are contingent on individual stability. The worker is the logical point at which stabilizing activities must commence. The stability of the whole system proceeds no farther than the average stability of its component parts—on the ability of the system to re-establish its balance when the changes of circumstance and force bring need of the restoration of balance.

When it is thus recognized that economic security for the wage worker is a basic objective of industry, many otherwise confusing problems are brought into a clearer light. The procedure necessary to attain this objective is revealed as simpler and more easily grasped, and it becomes obvious that many of the influences and practices of the past have prevented this attainment and must be abandoned.

Necessity of Reserves

I have said that immunity from the primary physical hazards cannot be secured, but that a degree of immunity from their ill financial effects is obtainable. The financial effect of a contingency is impairment of earning power or current income, and this effect can be avoided only if another form of income is substituted to replace that which is lost. The only way by which this substitute income may be made available is through an advance provision which builds up capital reserves—reserves representing the results of past labor which are preserved or "canned" for future use. Without considering for the moment who holds responsibility for building up such reserves, it is evident that reserves are the sole means of providing for the economic security of the worker when he, for any reason, cannot exchange his services for compensation.

The use of reserves for maintaining capital facilities unimpaired against future contingencies is thoroughly understood and widely practiced. Every manufacturing concern must every year make allowance for the depreciation of its machinery, no matter whether the business makes profits or not. The allowance for depreciation, though nominally a reserve, is really a necessary expense of operation, being nothing more nor less than the inevitable cost of replacing the machine, distributed year by year over its estimated life. The business must make this expenditure if it is to continue in existence any longer than the life of its machines.

Similarly, there are other vicissitudes of the business which may threaten its existence unless further reserves are provided. The machine may be supplanted by newly invented machinery or for other reasons which render it relatively inefficient or obsolete; there may be enforced idleness of the machine through economic depression as at the present time; there may be labor troubles, fire losses, breakdowns, or a thousand other emergencies, some of which may be foreseen and others of which are wholly unforeseeable.

To equip a business enterprise to face the unknown, or even to face the fairly well understood cycles of business expansion and contraction, it must amass a real reserve fund, that is, a fund separate from and beyond requirements for its ordinary daily operations. The only possible source from which this fund can be derived is from the profits of the business. In years when the business makes no profits, the reserve fund is not added to, and may even be encroached upon. When profits are made, if the management is sagacious, these profits are not all distributed to the owners of business; part of them is retained and added to the reserve fund, which thus grows until it becomes of such a size as to enable the business to face with equanimity any contingency which human foresight can anticipate.

A business which set up no reserves would doubtless succumb to the first stroke of bad fortune; yet these same elementary principles apply to the case of the individual employee, and if he is not similarly provided with adequate reserve funds his continued activity is in just as precarious a position as that of the business without reserves. He needs, and must have, a fund separate from and beyond the requirements of his ordinary daily operations.

Sound business principles applicable to the business itself are equally applicable to the individual employee. All of these risks may be safeguarded in a sound and business like way—death and disability by insurance, unemployment and superannuation by the accumulation of adequate reserves in the form of guaranteed annuities and suitable investments.

If business does not provide for the establishment of these reserves for the average worker, it leaves an extremely weak link in the industrial structure which at times may break with prodigious, threatening and even disastrous results to the well being of individuals, of business and of society as a whole.

Cost of Reserves

What does it cost to establish these necessary reserves? How much of a problem is involved in terms of the current earning power of the average worker? A few figures may help us to visualize this situation.

We will assume an average employee, 35 years of age, and with an annual income when fully employed of $1,600. Disregarding, for the time being, any apportionment of outlay between employee and employer, what is the total amount of the investment involved in providing necessary reserves against all of the primary hazards?

We can provide this worker with group life insurance paying $1,000 at death or when he is totally and permanently disabled, together with certain sickness and accident benefits paying $10 a week during temporary disability, for the annual sum of about $25. In addition, we can provide an ordinary life insurance policy paying another $1,000 at death for about $25 a year additional. And we can provide an annuity payable at age 65, equal to $1 per month for each year of service, for the sum of $62 per year. $112 a year, therefore, which is 7 per cent of the worker's annual income, will provide a fair degree of protection against these hazards.

We have thus provided in some degree for all of the primary hazards except unemployment, and the question arises as to what reserve is necessary to meet this contingency. It is possible that, in case of unemployment, the employee might be able to reduce his current living expenses to one-half of the income he has received while working, that is, to the rate of $800 per year. In order to calculate the amount of the reserve at all, we must first make some such assumption. On the basis of this assumption, the next question is—what proportion of his time over a relatively long period will he be employed? Obviously, if the proportion of unemployment is zero, he will require no reserve at all. But if he is unemployed 10 per cent of the time, it becomes necessary that a sum equal to 5 per cent of his earnings be set aside while he is working in order that it may provide for his current expenses, when he is not working, at the rate of $800 a year. If he is unemployed 20 per cent of the time he must have a 10 per cent reserve; if 50 per cent of the time, a 25 per cent reserve, and so on.

What reserve then does he really need? Obviously no one knows. The risk is incalculable. It is contingent on so many uncertain factors and its possible variation is of so wide a range that the most we can do is to provide as large a reserve as practicable.

I will refer to the problem of unemployment again at a later point in the discussion. For the present we will leave the cost of moderate reserves at 7 per cent of income, plus an indeterminable amount to cover unemployment which should be as large as possible.

Responsibility for Reserves

Having pointed out the need of reserves and their approximate cost, the question now naturally arises as to who should bear the responsibility of providing them?

Is this a responsibility of the individual, of his immediate family, of charitable persons or institutions organized by benevolent members of society, or of the State? Obviously it may be the responsibility of any of these, depending on the character of the social organization in which the worker finds himself—in Germany, Russia, the U. S., or elsewhere.

It seems to me that in *our* social order the responsibility falls primarily on the individual worker. He and his dependents are the ones who suffer most acutely from failure to make adequate provision. The primary physical hazards of life do not arise by virtue of the employment or non-employment of the individual worker. They are inherent in existence and not caused by any act of the employer or of society in general. Nature has placed man under the necessity of preserving his own life and that of his own dependents by his own efforts. Our society bases its practices, laws and institutions upon these requirements of nature, and all members of our society, therefore, naturally look to the individual as the responsible party.

But the question is, how in practice does this simple fundamental premise work out? In order that the worker may provide these reserves for himself, he must first of all possess, in an adequate degree, the individual qualities of foresight, knowledge and self-control. These are his own responsibilities from which no one can safely free him.

On the other hand, he also requires an adequate income in order to make possible the accumulation of any reserve at all. While the individual is held responsible for his own self-support he is dependent for this, at the same time, on wages, and wages depend to a very large extent, not on his own, but on another's determinations and acts. If society does not afford him adequate opportunity to discharge the responsibility it places on him, society itself may incur the necessity of discharging some part of that responsibility for him.

Even where the average worker does have some provision in the form of capital or income, as he often does, so that he is financially able to temporarily carry out at least a part of the provisions for his own protection, the significant fact of past experience is that, as a class, he does not do so. Early in life the primary hazards seem too remote; immediate prospects for indulgence and expenditure are too absorbing and attractive, while in advanced years the drain on income, which is necessary for adequate protection, becomes excessive or impossible to bear. In this respect experience shows that the average worker fails to exercise the necessary foresight, knowledge, and self-denial effectively.

The responsibility is not discharged unless relatively early in his life the individual has the way marked out for him very plainly; unless he is induced to follow in that way; and unless he is given a considerable amount of very tangible help and encouragement. Because of this, organized effort on the part of employers or of society becomes necessary if these essential ends are to be accomplished.

Thus society may incur a double responsibility in this connection. First, it must provide an adequate income through employment and wages; second, it must provide organized effort to make more certain that the self-help thus made possible is really carried out.

If society, in this way, incurs a partial responsibility, may it not be necessary that, as a practical expedient, it must assume the entire responsibility? This question is of utmost importance in a discussion of this subject, for on the answer depends the whole matter of the economic unsoundness of paternalism.

If society discharges the individual's responsibility for him, it injures or destroys the individual by weakening his character. It atrophies his qualities of initiative self-control, forethought, and responsibility in general by removing in some degree the necessity for exercising these qualities. The worker becomes parasitic, instead of self-reliant. If society destroys the character of its individual members, it destroys itself. Business cannot afford to permit the character of its wage workers to be weakened nor their buying power reduced, but must in the interest of its own preservation, perpetuation, and development, encourage its workers to strengthen their characters, increase their efficiency and earning power, and to spend their earnings wisely, partly for consumable goods and partly for capital goods in the form of income producing reserves.

These arguments could be developed in great detail and at great length but it is probably unnecessary to do so here. They are not only fully supported by common sense but by the past experience of those European and other states which have experimented so unsuccessfully with paternalistic systems of doles and other like benefits.

The entire responsibility for self-support must not be removed from the worker. Even from the standpoint of charity, the only justifiable charity is to help him to help himself. Inducement and education, not paternalism or compulsion, are required.

COST SECTION

It makes a great difference in considering the subject of employee benefits as to what the employer thinks is his responsibility with respect to providing them for his employees. If he thinks he, as an employer, is responsible for protecting his employees from the ill effects of these hazards, he will believe, either from a sense of responsibility or from a sense of benevolence, that he alone must pay for this protection. I do not believe benevolence is a proper business motive, nor do I believe that the employer as such is responsible for protecting employees from hazards which he neither creates nor controls. I think the employer is primarily responsible to his stockholders: that the measures he establishes to protect employees are not, and should not be, for the purpose of paying for loyalty, or for long service, or for satisfying benevolent impulses. They are to improve efficiency in order to stabilize and increase profits. Any other motive, in my opinion, is abortive and self-contradictory.

Current Practice

So far in the discussion we have considered the elements of hazard, the necessity for reserves, the cost of these reserves, and, in a general way, the responsibility for accumulating them. It should be next in order to consider how and to what extent these basic considerations are being carried out in current practice.

We will therefore discuss in sequence, current practice as it relates first, to life and disability coverage; second, to old age coverage; and third, to unemployment.

Life and Disability Coverage

The use of group insurance, covering life, health and accident, is fairly widespread. Reliable estimates indicate that probably 30 per cent of industrial workers are so covered with an average policy of about $1,200. In over one-half of these it is estimated that the employer pays the entire outlay. Of the balance, a few plans are supported entirely by the employee, the rest by joint contributions, in various proportions, by both employer and employee.

In a detailed examination of the nature of this coverage, three facts stand out. First, the coverage is very inadequate so far as the total number of industrial workers is concerned, 30 per cent being too low a proportion of the total. Second, even when employees are covered by group life insurance, this coverage, from the standpoint of protection, is far from adequate. Third, paternalism—gratuitous support by the employer—plays a large part.

These three facts are closely interconnected. The outlay for group insurance is relatively low, but the benefits accruing are correspondingly limited. The employer desirous of seeing his employees fully covered is faced with a difficult problem. Employees do not voluntarily contribute enough themselves to provide adequate coverage, while company support sufficient for this purpose is more of a burden than the employer usually thinks he can afford to pay. This burden, coming in good years as well as bad, when there are profits and when there are not, might conceivably mean the undoing of the business and this is especially true when benefits are increased as the length of service increases. It is an expense, moreover, from which the employer probably derives little, if any, direct and compensating return in increased profits due to increased efficiency of the workers. The worker receives his benefits equally whether he does his work well or poorly, provided only that he does it well enough to hold his job. The incentive exerted is merely passive in its influence on organization efficiency and production costs. Such benefits may restrain the worker from deliberately injuring company interests but they do not enlist him actively in its behalf. Each dollar of coverage so supplied therefore tends to place the company to that much disadvantage in competition with concerns who have not assumed this burden.

Our conclusion is that with isolated plans limited to group insurance protection, neither voluntary contribution by the employee, nor company contribution to the limit of permissible burden, will result in an adequate amount of coverage.

While in most cases group insurance appears to be essential, a more desirable form of protection than group insurance should be added, and it is available in the form of ordinary or whole life insurance. It is a more permanent form of coverage than group insurance in that it may be regarded as an investment and in that it may be made the worker's personal property not subject to loss with change of employer. The higher outlay involved has led employers generally to take camparatively little part either in providing such insurance gratuitously or in encouraging workers to procure such insurance voluntarily by their own contributions or by contributions made jointly by employer and employee. The greater outlay intensifies the difficulties already pointed out for group insurance.

At a later point we will develop what seems to us the most rational way for meeting these fundamental difficulties.

Old Age Coverage

Regarding old age coverage the use of pension plans is also fairly widespread. Estimates indicate that 40 per cent of industrial workers are covered by plans under which they may receive pensions if specified requirements are met. The more important provisions of the typical plan are found, on detailed study, to be approximately as follows:

First, a pension of modest amount, varying from $25 to $100 a month, commencing upon retirement at age 65 or 70, the exact amount in each case being dependent on (a) length of service and (b) average earnings during that service. (For example, a usual provision is for an annual pension equal to 1 per cent of all earnings during employment or during a fixed number of years prior to retirement.

Second, this pension is made available only to employees who have been continuously in the company's service from 20 to 30 years or more.

Third, the outlay is usually borne entirely by the employer. (The majority of existing pension plans so provide although a large proportion of recent retirement plans have provided that the worker may or shall bear part of the outlay.)

Fourth, these pension rights are lost with termination of employment at any time prior to the retirement age.

Fifth, these pension rights do not represent a contractual relationship with the employee so that for a number of reasons not in the employee's control they may be withdrawn at any time, leaving him unprotected.

The practical difficulties in and objections to plans of this type have proved to be very formidable indeed. Not the least of these has been the financial burden involved and the practical certainty of ultimate insolvency and abandonment. In the first place, the funds required to cover the accruing liabilities are not capable of exact calculation because the actual pensions will be determined by the earning rates of the future which are currently unknown. In the second place, as reserves to cover pension liabilities under the plan are not usually provided for as the liabilities accrue or otherwise, pension disbursements will increase from year to year only reaching a steady and maximum level many decades after the commencement of the plan, and this only in the event that the number of employees' wages or benefits are not increased in the mean-

time. At this time the disbursement will be ordinarily at least 15 times the disbursements of the first year, and even assuming no change in the number of employees nor in wages, can amount total to 30 per cent of the active payroll. No employer could afford to carry a burden of such suicidal proportions even if he desired to do so, and the inevitable conclusion is, that such plans, even those in which the pensions are already very inadequate, will have to be abandoned long before they reach the maximum disbursement period.

As in the case of life insurance, these expenditures will not have contributed materially to the efficiency of the business nor decreased the cost of production appreciably, if at all. The only incentive which such pensions seem to provide is to urge the worker to try to remain with the company until his abilities diminish and he must be retired.

During the hearings before a Subcommittee of the Committee of Manufacturers, United States Senate, last autumn, Mr. Gerard Swope, President of the General Electric Company, stated:

"As I said before with regard to life insurance, the pensions were formerly given free by the company; and of course the men accepted them. It did not mean anything to them and they did not pay any attention to it; but the moment you ask a man to pay something for anything, he is going to make a more critical analysis of it."

The benefits the worker receives from gratuitous plans are not contingent on whether he does his work well or poorly, but only on whether he does his work well enough to hold his job until he arrives at retirement age. He has been relieved of taking thought for his own future, with its consequent inevitable deterioration of individual responsibility and character, by a promise. But he has no way of knowing that in all probability that promise will not and cannot be fulfilled. Thus the worker may find himself at 65 or 70, through no fault of his own, deprived of his anticipated pension for such reasons as failure of the company, lack of funds, forced change of employment, or even withdrawal of the plan.

Neither the motive of benevolence nor charity, nor the direct cash value of a large group of long service workers, can begin to compensate for the defects of such a plan.

However, it is to be noted that there is a growing and praiseworthy tendency to base retirement plans on annuities purchased currently from an insurance company, rather than on an unfunded pension promise. This annuity is an instrument which, if purchased today, will definitely provide the worker with an element of income after he retires which he has earned by the year's service just past. If such an element of future income is purchased for continuing service with each succeeding year, his retirement income is not only assured but each year's liabilities are discharged as they accrue. Annuities placed with insurance companies are not only guaranteed as to principal and interest but are probably exceeded in safety by no other existing form of investment security.

It is my firm conviction that no plan can be worthy of consideration which does not fulfill two basic requirements; first, it must derive substantial support from the individual contributions of each worker, in order that he may have adequate coverage without loading an excessive burden on his employer. Second, it must be based on a system which provides for the discharge of the obligations created under it as fast as they accrue, thus remaining solvent from the outset.

From the standpoint of universal coverage, present plans are also open to the objection of inadequacy. In the first place, a gratuitous plan must presuppose a long service requirement in order to keep within reasonable bounds of outlay. The customary 25 years service clause is said to eliminate nearly 70 per cent of the indigent aged from the possibility of pension benefits, at the same time discouraging the employment of workers who have already reached the age of 40 or 45, who are often the most efficient and, in other respects, the most desirable employees.

In the second place, there is again the problem, discussed under life insurance, of securing sufficient voluntary self-support where gratuitous support is not provided. These various factors will all be again considered at another place in our discussion.

Unemployment Coverage

On the whole there is no present coverage for unemployment, although a number of concerns are known to be making experiments in this direction. Present conditions have led to a wide discussion of this subject, particularly with relation to unemployment insurance. In this connection it should be pointed out that there can be, strictly speaking, no unemployment insurance since no actuarial basis exists for creating reserves to meet this risk. Unemployment insurance administered by the state is not likely to be anything more nor less than a dole in the end—with all the abortive and detrimental results which that form of paternalism includes.

The danger, yes, the futility of relying on a state system or any other method of establishing economic security for the wage worker, other than one which is based on the possession by the individual worker himself of the resources which provide that security was clearly disclosed by Mr. J. Pierpont Morgan in a recent radio address when he said in part:

"During the present distress, and in face of the approaching exhaustion of both governmental and private funds for its relief, a new idea has been evolved," etc., and when, in another part of this address, he stated:

"We have reached a point where the aid of governments or the gifts of individuals, no matter how generous, are insufficient to meet the conditions which have come upon us."

It is my conviction that the most rational beginning to the solution of the unemployment hazard is to enable and induce workers to accumulate adequate individual reserves for themselves with which to meet this contingency.

Again, as in the other forms of coverage, there is the difficulty of inducing the worker to exert the necessary wisdom and self-denial in his own behalf.

Defects Summarized

Thus the more important defects in present systems of protection, as I see them, may be very crudely summarized as follows:

First, paternalism—leading to excessive and unjustified economic burden of employers on the one hand, and to deterioration of the individual character and responsibility of employees on the other.

Second, technique—inadequate practical provisions and details leading to insufficient and uncertain coverage.

Third, incentive—inadequate incentive to invite self-provision at an early age when adequate provision is effectively possible at a minimum cost.

The most fundamental of these difficulties is the third, inadequate incentive, for technique is largely a matter of straight-forward practical development, while all supposed necessity for paternalism is avoided when adequate incentive and opportunity to self-help is attained.

Adequate Incentive to Self-Protection

In examining the probable reasons for failure of employees generally to provide self-protection, let us first consider the bearing of age on the cost of this protection.

Unfortunately the average man does not become interested in provision for the future until he is 40, 45 or 50—until he has a growing family, has experienced the devastating effects of some of the unexpected vicissitudes of life, begins to feel the weight of dependence, and recognizes his own limitations and the limitations of his environment with respect to his prospects for the future. To the worker of 25 to 30, old age dependence and death seem very remote indeed. Even sickness and disability, at that age, are regarded with very little apprehension. Youth in its vigor, its confidence in itself, and its eagerness for adventure, quite naturally and yet unwisely, plans only for uninterrupted success and often looks upon the failures of those who have gone before as the result of obvious mistakes and forms of incompetence which do not appear on the map of life he draws for himself.

It is almost impossible to interest younger workers in self-provision against old age, death or even disability, if these forms of protection are presented as isolated proposals. Practical experience with this problem reveals only one rational solution; namely, a comprehensive plan embracing all phases of protection and including a contingent feature of especial attractiveness to younger workers.

Such a plan can be roughly outlined as follows:

First, group insurance and retirement annuities of very modest amount—reduced to the bare subsistence level—to which the employer will make a substantial contribution if the employee will volunteer to do likewise.

Second, provision for ordinary life and disability policies toward which voluntary contributions by employees are matched to a specified limit with contributions by the employer.

Third, provisions which enable the employee to increase the amount of his life insurance and annuities as he thinks best and to be paid for solely by himself.

Fourth, provision for a savings and investment fund for employees, in which deposits of his savings are augmented by profit-sharing, and in which participation is conditional on the complete exercise of the foregoing options for minimum amounts of insurance and annuities.

Fifth, provision for a comprehensive system of employee education whereby principles and details of effective self-help and self-protection are constantly reiterated. This education, among other things, should also make clear and significant to him the principles and practices of business, particularly of that business in which he is engaged.

It is the fourth feature, conditional participation in an investment fund and in profits, that very effectively meets the problem of incentive to younger workers. Real profit-sharing can be made to provide a very attractive inducement to all workers, young as well as old.

Savings and Investment Fund

Under this plan optional monthly deductions from wages would be placed in a trust fund and invested under suitable expert administration. A fixed and specified percentage of company profits would be added periodically to this fund as earned. Each depositor's share in the fund would remain distinct and would be reported to him periodically. Under these arrangements, the individual deposits would be augmented by (1) appreciation of the fund through investment; (2) additions from profits; and (3) accumulation at compound interest. With suitable restrictions to prevent manipulation, each depositor would be free to withdraw all funds to his credit at any time during employment or when employment is terminated.

By the miracle of compound interest it is readily possible for an average worker, during his working life, by small monthly contributions, moderate success in investment, and moderate sharing of profits, to have accumulated at 65, not only a suitable annuity, but also an estate of from $10,000 to $25,000. This, we maintain, is an extremely effective inducement, to the younger as well as to the average worker, to make the necessary self-provision against all risks, to remain in the company's service and to exert maximum effort toward the general welfare of the company.

Experience shows that a comprehensive plan such as that outlined will insure wide adoption of the essential protective elements, yet at the same time will avoid paternalism, and increase individual self-reliance, self-denial and sense of individual responsibility. It may be designed to be effective practically and at the same time be economically sound and self-supporting. All of these features may be provided at a total investment by the employer which is generally less than the total annual cost of some of the typical unfunded plans which provide no benefits other than pensions. Moreover, the positive commitments, or the fixed charges of the employer and employee are reduced to a very low minimum, while the maximum expenditures come during those periods when profits are largest and the additional outlay most readily met.

It is evident that the improvident employee who fails to take advantage of this opportunity for self-protection, fails to deserve any help whatever from his employer but must rely on general social provision for his needs which he will obtain in such manner as society determines.

More Stable Profits

In closing one more point may be considered. We have outlined an employee benefit in which the necessary incentive to self-help is provided by the investment and profit-sharing features. Profit-sharing is a major point, a key feature, in the operation of this plan. In order to secure the best possible effectiveness it is evident that there must be adequate profits to share.

Reserves for the depreciation of machinery or for meeting other business risks, cannot be accumulated without adequate profits. If the arguments of our discussion have been made clear it must be conceded that it is equally difficult to provide for the essential human reserves without the diversion of adequate profits to this purpose.

Even before the depression caused unprofitable operation to become generally accepted as more or less inevitable there was much discussion and protest in regard to inadequate profits. The term "profitless prosperity," it will be recalled, was in very common use. Income tax statistics indicate that less than 25 per cent of our industrial enterprises are really profitable even in the so-called prosperous years.

In some cases, but not all, unprofitable operation has been obviously due to mismanagement and inefficiency. But the conviction of many expert observers persists that much more of it is due to comparatively recent developments in the nature and intensity of unrestricted competition. In many industries real competitive advantage, in comparing the products of one manufacturer with those of another, has been reduced to almost negligible proportions by the wide dispersion of technical knowledge and by the diminishing returns of technical progress. In addition, surpluses of capital, labor, and equipment—all the facilities of production—have been accumulated to such an extent that large excess productive capacity is the rule.

The result has been an extremely intense competitive warfare, hinging on price and therefore tending to reduce price to bare subsistence levels, prominent characteristics of which have been excessive distribution cost and waste represented in duplication of factories and excessive selling effort. In other words, competition has developed to an increasing degree a dual aspect. On the one hand is

(Continued on page 47)

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

CIGARETTE PAPER

Champagne Paper Corp., Lafayette, Havre, 80 cs.; Champagne Paper Corp., Paris, Havre, 55 cs.; De Manduit Paper Corp., Paris, Havre, 121 cs.; Gluckman & Strauch, Paris, Havre, 5 cs.; American Tobacco Co., Paris, Havre, 400 cs.; Liggett & Meyer Tobacco Co., Paris, Havre, 43 cs.; American Express Co., Paris, Havre, 10 cs.; Standard Products Corp., Paris, Havre, 93 cs.

WALL PAPER

R. F. Downing & Co., Olympic, Southampton, 1 cs.; Hemsoth Basse & Co., Manhattan, Hamburg, 1 crate; Irving Trust Co., A. Ballin, Hamburg, 3 cs.

NEWS PRINT

Jay Madden Corp., Gen. von Steuben, Bremen, 515 rolls; Parsons & Whittemore, Inc., United States, Oslo, 173 rolls; M. H. Bell, Markland, Liverpool, N. S., 3,544 rolls; Perkins Goodwin & Co., St. Louis, Hamburg, 270 rolls; J. J. Murphy Paper Co., Gripsholm, Gothenburg, 136 bls.; Parsons & Whittemore, Inc., Bergensfjord, Oslo, 39 rolls; ——, Bergensfjord, Oslo, 313 rolls; Baldwin Paper Co., A. Ballin, Hamburg, 119 rolls; Perkins Goodwin & Co., A. Ballin, Hamburg, 227 rolls.

PRINTING PAPER

E. Dietzgen & Co., Veendam, Rotterdam, 11 cs.; E. Dietzgen & Co., A. Ballin, Hamburg, 27 cs.

WRAPPING PAPER

E. Dietzgen & Co., Veendam, Rotterdam, 6 cs.; A. Johnson & Co., Inc., Gripsholm, Gothenburg, 811 rolls; Van Oppen & Co., Pr. Johnson, Genoa, 32 cs.; ——, A. Ballin, Hamburg, 255 rolls.; D. E. Bordner, A. Ballin, Hamburg, 18 bls., 5 pkgs.

PACKING PAPER

F. C. Strype, A. Ballin, Hamburg, 27 cs.

DRAWING PAPER

Artists Brush, Color Corp., American Merchant, London, 2 cs.; H. Reeve Angel & Co., Inc., American Merchant, London, 7 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., American Merchant, London, 2 cs.; H. Reeve Angel & Co., Inc., Olympic, Southampton, 12 cs.; J. Manheimer, Olympic, Southampton, 50 bales.

FILTER MASSE

P. H. Petry & Co., Brazil Maru, Hamburg, 100 bls.

METAL COATED PAPER

Globe Shipping Co., Bremen, Bremen, 54 cs.; K. Pauli Co., A. Ballin, Hamburg, 16 cs.

SURFACE COATED PAPER

Gevaert Co., of America, Minnetonka, Antwerp, 60 cs.

BARYTA COATED PAPER

Globe Shipping Co., Karlsruhe, Bremen, 35 cs.

COATED PAPER

Happel & McAvoy, St. Louis, Hamburg, 1 cs.; Happel & McAvoy, A. Ballin, Hamburg, 43 cs.

BASIC PAPER

C. Bruening & Co., Verndam, Rotterdam, 6 rolls.

COLORED PAPER

F. Murray Hill Co., Manhattan, Hamburg, 4 cs.

TRANSFER PAPER

Bush Service Corp., St. Louis, Hamburg, 1 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., Laconia, Liverpool, 3 cs. (duplex)

TISSUE PAPER

Rohner Gehrig & Co., Lafayette, Havre, 7 cs.; M. Snedeker Corp., American Merchant, London, 1 cs.

ENVELOPES

Beckhard Simfred Corp., A. Ballin, Hamburg, 2 cs.

GUMMED PAPER

Walker Wynkoop & Co., Veendam, Rotterdam, 4cs.

STENCIL PAPER

Bush Service Corp., Berengaria, Southampton, 1 cs.

CARD BOARD

Coty Processing Co., Paris, Havre, 3 cs.; Cheramy, Inc., Paris, Havre, 4 cs.; American Express Co., Berengaria, Southampton, 5 cs.

PASTE BOARD

Coty Processing Co., Lafayette, Havre, 15 cs.

MISCELLANEOUS PAPER

Keller Dorian Paper Co., Paris, Havre, 2 cs.; Caldwell & Co., Paris, Havre, 4 cs.; The Borregaard Co., Inc., Gripsholm, Gothenburg, 67 rolls; H. Reeve Angel & Co., Inc., Gripsholm, Gothenburg, 13 bls.

RAGS, BAGGINGS, ETC.

W. Steck & Co., Pr. Hoover, Kobe, 20 bls. rags; 1st Nat'l Bank of Boston, United States, Copenhagen, 116 bls. rags; Bank of Manhattan Trust Co., United States, Copenhagen, 96 bls. rags; E. J. Keller Co., Inc., Veendam, ——, 24 bls, canvas; Banco Com'l Italiane Trust Co., Veendam, Rotterdam, 18 bls. rags; J. Cohen Son & Co., Laconia, Liverpool, 63 bls. paper stock; Van Oppen & Co., City of Lille, Antwerp, 44 bls. rags; Van Oppen & Co. City of Lille, Antwerp, 148 bls. baggings; G. W. Millar &

Co., Inc., City of Lille, Antwerp, 189 bls. flax waste; ——, Manhattan, Hamburg, 42 bls. rags; D. M. Hicks, Inc., Manhattan, Hamburg, 39 bls. rags; ——, A. Ballin, Hamburg, 80 bls., rags; 1st Nat'l Bank of Boston, A. Ballin, Hamburg, 50 bls. rags; Bank of N. Y. & Trust Co., Vulcania, Trieste, 80 bls. rags.

BONE GLUE

——, St. Louis, Hamburg, 120 bags; ——, A. Ballin, Hamburg, 200 bags.

HIDE GLUE

——, Vulcania, Trieste, 401 bls.

OLD ROPE

——, Augvald, Barcelona, 40 bls.; Banco Com'l Italiane Trust Co., Vulcania, Trieste, 60 coils.

CASEIN

Kalbfleisch Corp., Southern Cross, B. Ayres, 71 bags.

WOOD PULP

Lagerloef Trading Co., Hallaren, Kirkkoniemi, 131 bls. sulphite; Lagerloef Trading Co., Hallaren, Viborg, 808 bls. sulphite; Lagerloef Trading Co., Hallaren, Rauma, 349 bls. sulphite; Lagerloef Trading Co., Hallaren, Rauma, 390 bls. mechanical; J. Manheimer, Veendam Rotterdam, 50 bls. pulp; ——, St. Louis, Hamburg, 250 bls. wood pulp 50 tons; Johaneson Wales & Sparre, Inc., Gripsholm, Gothenburg, 110 bls, wood pulp; E. M. Sergeant & Co., Gripsholm, Gothenburg, 299 bls. dry soda; Johaneson Wales & Sparre, Inc., Karlsruhe, Bremen, 503 bls. wood pulp; J. Anderson & Co., Bergensfjord, Oslo, 125 bls. sulphite; E. M. Sergeant & Co., Bergensfjord, Oslo, 450 bls. chemical; Atterburg Bros., Inc., Bergensfjord, Halden, 4 bls. sulphite; Irving Trust Co., Bergensfjord, Drammen, 400 bls. sulphite; Castle & Overton, Inc., A. Ballin, Hamburg, 280 bls. wood pulp, 56 tons.

WOOD PULP BOARDS

——, St. Louis, Hamburg, 22 bls.; ——, St. Louis, Hamburg, 32 rolls.

WOOD FLOUR

State Chemical Co., Veendam, Rotterdam, 600 bags.; B. L. Roberski, Bergensfjord, Frederickstad, 615 bags.

PULP WOOD

West Virginia Pulp Paper Co., Sonja, Soldiers Cone, 1520 cords; G. S. Kerr & Co. (Fulton, N. Y.) Dampfire Rexton. N. B., 1200 cords.

ALBANY IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

Amtorg Trading Corp., Fernwood, Leningrad, 3711 cords pulpwood.

NEW LONDON IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

——, Hallaren, Viborg, 300 bls. sulphite.

PORTLAND, (MAINE) IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

Lagerloef Trading Co., Hallaren, Kotka, 965 bls. sulphite; ——, Hallaren, Kirkkoniemi, 2600 bls. sulphite; ——, Hallaren, Viborg, 3405 bls. sulphate; —— Hallaren, Viborg, 624 bls. sulphite; Irving Trust Co., Hallaren, Viborg, 306 bls. sulphate; Lagerloef Trading Co., Hallaren, Rauma, 1015 bls. sulphite; Lagerloef Trading Co., Hallaren, Rauma, 2465 bls. sulphate; Gottesman & Co., Inc., Consul Corfitzen, Sweden, 7010 bls. wood pulp.

BOSTON IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

French Worsted Co., Black Eagle, Antwerp, 67 cs. paper tubes; Stone & Downer Co., Hallaren, Kotka, 120 rolls newsprint; Jay Madden Corp., Hallaren, Kotka, 136 rolls newsprint; Lagerloef Trading Co., Hallaren, Kotka, 430 bls. sulphite; Lagerloef Trading Co., Hallaren, Kotka, 650 bls. sulphate; ——, Hallaren, Viborg, 640 lbs. sulphate; Irving Trust Co., Hallaren, Viborg, 175 bls. sulphate; Castle & Overton, Inc., Hallaren, Viborg, 3175 bls. wood pulp; Lagerloef Trading Co., Hallaren, Rauma, 304 bls. sulphate; Lagerloef Trading Co., Hallaren, Rauma, 1300 bls. sulphite; Lagerloef Trading Co., Hallaren, Rauma, 260 bls. mechanical; G. F. Malcolm, Laconia, Liverpool, 6 cs. tissue paper; F. S. Webster Co., Laconia, Liverpool, 5 cs. tissue paper; Atkinson Haserick & Co., Pr. Polk, Genoa, 6 cs. paper.

PHILADELPHIA IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

American Over-Ocean Corp., Sanyo Maru, Kobe, 75 bls. rags; Gottesman & Co., Inc., Sydic, Sweden, 500 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

Parsons & Whittemore, Inc., City of Newport News, ——, 500 bls. sulphite; Parsons & Whittemore, Inc., City of Baltimore, ——, 1000 bls. sulphite.

HOUSTON IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

Banco Com'l Italiane Trust Co., Guilia, Trieste, 153 bls. bagging; Banco Com'l Italiane Trust Co., Guilia, Venice, 272 bls. bagging.

SAVANNAH IMPORTS

WEEK ENDING SEPTEMBER 3, 1932

Manufacturers Trust Co., Sanyo Maru, Shanghai, 183 bls. bagging; 1st Nat'l Bank of Boston, Sanyo Maru, Shanghai, 500 bls. tares.

Albany Paper Corp. Buys Paper Mill

The paper mill at Albany, Ind., owned by the Bahr Refiners Paper Corporation has been sold to the Albany Paper Corporation. Charles and Sam Bahr purchased this mill from T. F. Hart about five years ago primarily to conduct experiments with machinery invented and manufactured by the well-known Bahr Bros. Manufacturing Company at Marion, Ind. Having completed the experiments and gained information to meet the present day conditions in the paper industry, they have sold their interests to the new corporation.

Pa-Pro Co. Installs Machinery

[FROM OUR REGULAR CORRESPONDENT]

UTICA, N. Y., August 29, 1932.—New machinery has been installed in the plant of the Pa-Pro Company which recently moved here from Glenfield. The equipment was purchased from a concern at Camden, N. J., and transported here. In conjunction it was announced that the production of corrugated cardboard boxes had been started in addition to their original line of fiber boxes. A number of new employees have been taken on for production of the new line.

Turners Falls Plant to Resume

[FROM OUR REGULAR CORRESPONDENT]

TURNERS FALLS, Mass., September 5, 1932.—The plant of the International Paper Company here, closed since March, is to resume operations on full time, according to Joseph Hosmer, agent. This plant now has 185 employees on its payroll.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, September 7, 1932.

Trading in the local paper market was only moderately active during the past week. However, now that the summer holidays are drawing to a close, demand for the various standard grades of paper should be more buoyant from now on until the end of the year, at least. In sales circles, more optimism is expressed, although prices are irregular.

Manufacturers of news print paper in the United States and Canada are maintaining operations in sufficient volume to take care of current requirements. Shipments are going forward with fair regularity. It is hoped that consumption will expand materially in the near future. The price situation continues unsatisfactory.

Some improvement is anticipated in the paper board market. Demand for box board is fairly persistent. No radical price changes have been reported. The fine paper market is displaying greater strength, due to increased activity of the mills. Tissues are in seasonal request. The coarse paper market is spotty.

Mechanical Pulp

The ground wood market is easier. Prices of both domestic and imported mechanical pulp are soft. No. 1 domestic is now quoted at from $16 to $24 per ton, f.o.b. mill; while No. 1 imported moist is offered at from $18 to $21, and dry at from $19 to $21 per ton, on dock, Atlantic ports.

Chemical Pulp

Steadiness prevails in the chemical pulp market. Inquiries for both domestic and imported grades are more numerous, some of which should materialize into good orders. Prices are holding to schedule, without difficulty, with the exception of No. 2 imported kraft pulp, which is now being offered at from $1.30 to $1.40.

Old Rope and Bagging

The old rope market is showing signs of improvement. Demand for both domestic and imported old manila rope is somewhat broader than of late. Small mixed rope, however, is comparatively quiet. The bagging market is fairly active. Gunny and scrap bagging are slightly firmer, while roofing bagging is steady.

Rags

Paper mills are beginning to show more interest in the domestic rag market. Cotton cuttings continue firm, due to the recent rise of the staple. Roofing grades are stronger than for some time past. The imported rag market is practically unchanged and prices of the various grades continue strictly nominal.

Waste Paper

The paper stock market is exhibiting a stronger undertone. Board mill demand for the lower grades is more in evidence. Quotations on strictly folded news are well maintained. The better grades of waste paper are in satisfactory request. Book stock is firmer. Soft and hard white shavings are steady.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. Demand is fairly satisfactory considering the time of year and trading should become more livelier now that the holidays are practically ended. Prices are generally steady and unchanged.

ECONOMIC SECURITY OF WORKERS

(Continued from page 44)

constructive competition which has compelled technical progress in design and in production efficiency to an unsurpassed degree. On the other hand is destructive competition which has induced excessive distribution cost and distribution waste.

It is becoming increasingly evident that a new concept of competition has become necessary, if not imperative. One is needed which legally and technically provides for a greater degree of coordination and effectiveness in distribution functions without at the same time sacrificing the present incentives to efficiency and progress in the production functions.

Adequate security for business or for workers can only be provided if there are adequate profits. And this fact presents one more urgent reason for much reflection with respect to the practicability of existing legislation relative to competition. This legislation seems to encourage, if it does not actually compel, unrestricted and warlike competition equally whether that competition is constructive and beneficial to public interest or wasteful and contrary to public interest. We may be able to recover successfully from the destructive influences of a great war, for when it is once over the problems of war itself no longer exist; but we may well ponder whether it is possible for the most skilled intellects and the best intentioned people to cope with the complicated problems of a social system which compels men to fight one another often on unequal terms —which contemplates an advancing civilization, confronted with one continual crisis, a state of unending civil war.

Kimberly-Clark Branch Active

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., September 6, 1932.—A noticeable increase in volume of orders has been experienced by the Kimberly-Clark Corporation in its crepe wadding divisions where dental, hospital and sanitary products are made from cellucotton. It has been necessary to add thirty girls at the Neenah division, and fifty girls and fourteen men at the Niagara Falls, N. Y. division. This branch of the Kimberly-Clark operations has held up much better than the paper divisions, due in part to an aggressive sales policy adapted to the times, and the introduction of a newly patented sanitary napkin that attracted immediate popularity with the trade.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, September 7, 1932.

BLANC FIXE.—The position of the blanc fixe market is practically unchanged. Prices are holding to schedule. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk; while the powder is selling at from 3½ cents to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—Conditions in the bleaching powder market are fairly satisfactory. The contract movement is seasonal. Prices are generally holding to previously quoted levels. Bleaching powder is selling at from $1.75 to $2.00 per 100 pounds, in drums, at works.

CASEIN.—The casein market holds firm. Domestic standard ground is still quoted at 5¼ cents and finely ground at 6¼ cents per pound. Argentine standard ground is selling at 8 cents and finely ground at 8½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Demand for caustic soda is fairly persistent. Prices are steady and unchanged. Solid caustic soda is quoted at from $2.50 to $2.55; while the flake and the ground are selling at from $2.90 to $2.95 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market continues steady. Contract shipments are moving with regularity. Prices are unchanged. Imported china clay is quoted at from $10 to $15 per ton, ship side; while domestic paper making clay is selling at from $5 to $12 per ton, at mine.

CHLORINE.—Trading in the chlorine market is fairly persistent for the time of year. Prices are weaker, due to an unexpected price war. Chlorine is now quoted at $1.65 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market is much firmer. The grades of gum rosin used in the paper mills are now quoted at from $3.85 to $4.00 per 280 pounds, in barrels, at works; while wood rosin is selling at $2.70 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Some improvement was noticed in the salt cake market. Prices are firm. Salt cake is quoted at from $15 to $16; chrome salt cake at from $12 to $13 per ton, in bulk, at works; while imported salt cake is selling at from $14 to $15 per ton, ship side.

SODA ASH.—The soda ash market is attracting more notice from the mills than of late. Supplies are moving into consumption in good volume. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.00; in bags, $1.25; and in barrels, $1.38.

STARCH.—Most of the business transacted in the starch market during the past week was along routine lines. Prices are unchanged. Special paper making starch is quoted at $2.44 per 100 pounds, in bags; and at $2.71 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Business in the sulphate of alumina market is gradually improving. Prices are holding to schedule. Commercial grades are quoted at from $1.25 to $1.40; while iron free is selling at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market continues steady. Sulphur is quoted at $18 per long ton, on orders of 1,000 tons, or over, on yearly contracts; and at $20 per ton on any smaller quantity over that period. On spot and near by car loads, the quotation is $21 per ton.

TALC.—Moderately active conditions prevail in the talc market. The contract movement is fairly good. Prices are unchanged. Domestic talc is quoted at from $16 to $18 per ton, in bulk, at mine, while imported talc is selling at from $18 to $22 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	6.50	@38.00
Bonds	4.50	@53.25
Index	6.00	@12.00
Writings—		
Extra Superfine	6.50	@15.00
Superfine	6.25	@14.75
Tub sized	4.50	@ 7.00
Engine sized	4.00	@ 5.00
Book, Cased—		
S. & S. C.	5.25	@ —
M. F.	3.75	@ 5.00
Coated and Enamel	6.25	@ 9.75
Lithograph	6.75	@11.25
Tissues—Per Ream—		
White No. 1	.50	@ .70
Anti-Tarnish M. G. only	.65	@ .70
Colored	.70	@ .90
White No. 2	.55	@ .60
Kraft	.65	@ .70
Manila	.55	@ .60
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.00	@ 5.25
No. 2 Wood	3.50	@ 4.00
Butchers	3.37½	@ —
Fibre Papers—		
No. 1 Fibre	4.25	@ 5.50
No. 2 Fibre	4.00	@ 4.75
Common Bogus	1.50	@ 3.00
Screenings	2.00	@ 3.00
Card Middies	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs., No. 1	.09¼	@ —
No. 2	.11¼	@ —
Bleached, basis 20 lbs.	.11¼	@ —
(Delivered New York)		
News, per ton—		
Roll, contract	53.00	@ —
Rolls, spot	53.00	@ —
Sheets	58.00	@ —
Side Runs	38.00	@43.00
Kraft—		
No. 1 Domestic	4.75	@ 6.00
No. 2 Domestic	2.50	@ —
Southern	2.50	@ —
Imported	2.75	@ 3.50
Boards—per ton—		
News	22.50	@25.00
Straw	29.50	@35.00
Chip	22.50	@25.00
Binders' Boards	62.00	@70.00
Standard 85 Test Liner	24.00	@26.50
Sgl. Mla. Lt. Chip	35.00	@37.50
(F. o. b. Mill)		
Wood Pulp Boards	70.00	@80.00

Mechanical Pulp

(On Dock)

No. 1 Imported—		
Moist	18.00	@21.00
Dry	19.00	@21.00
(F. o. b. Mill)		
No. 1 Domestic	16.00	@24.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	2.10	@ 2.90
Easy Bleaching	1.60	@ 1.75
No. 1 strong unbleached	1.40	@ 1.60
Mitscherlich unbleached	1.60	@ 1.75
No. 2 strong unbleached	1.25	@ 1.35
No. 1 Kraft	1.50	@ 1.65
No. 2 Kraft	1.30	@ 1.40
Sulphate—		
Bleached	1.85	@ 2.15
(F. o. b. Pulp Mill)		
Sulphite (Domestic and Canadian)—		
Bleached	2.10	@ 3.75
Easy Bleaching	1.75	@ 1.90
News	1.50	@ 1.65
Mitscherlich	2.40	@ 2.55
Kraft (Domestic)	1.50	@ 2.75
(Delivered Paper Mills)		
Soda Bleached	2.25	@ —

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1.	4.00	@ 4.25
New White, No. 2.	3.00	@ 3.25
Silesias No. 1	3.75	@ 4.00
New Unbleached	5.50	@ 6.00
New Soft Blacks	2.75	@ 3.00
Blue Overall	3.00	@ 3.50
Fancy	1.50	@ 1.75
Washables	1.15	@ 1.40
Mixed Khaki Cuttings	2.50	@ 3.00
Pink Corset Cuttings	2.75	@ 3.25
O. D. Khaki Cuttings	3.00	@ 3.25
Men's Corduroy	1.00	@ 1.25
New Mixed Blacks	2.25	@ 2.50

Old Rags

White, No. 1—		
Repacked	3.00	@ 3.50
Miscellaneous	2.00	@ 2.25
White, No. 2—		
Repacked	1.75	@ 2.00
Miscellaneous	1.50	@ 1.75
Thirds and Blues—		
Repacked	1.50	@ 1.75
Miscellaneous	1.00	@ 1.25
Black Stockings	2.00	@ 2.25
Roofing Rags—		
No. 1	.53	@ .58
No. 2	.48	@ .53
No. 3	.43	@ .48
No. 4	.38	@ .43
No. 5A	.33	@ .38

Foreign Rags

New Rags

New Dark Cuttings	1.40	@ 1.50
New Mixed Cuttings	1.60	@ 1.75
New Light Silesias	3.40	@ 3.50
Light Flannelettes	3.25	@ 3.50
Unbleached Cuttings	5.50	@ 6.00
New White Cuttings	4.25	@ 4.50
New Light Oxfords	3.75	@ 4.00
New Light Prints	2.00	@ 2.25

Old Rags

No. 1 White Linens	5.25	@ 5.50
No. 2 White Linens	4.50	@ 4.75
No. 3 White Linens	3.25	@ 3.75
No. 4 White Linens	1.75	@ 2.25
No. 1 White Cotton	4.00	@ 4.25
No. 2 White Cotton	3.00	@ 3.25
No. 3 White Cotton	2.25	@ 2.50
No. 4 White Cotton	1.40	@ 1.50
Extra Light Prints	1.90	@ 2.10
Ord. Light Prints	1.60	@ 1.75
Med. Light Prints	1.40	@ 1.55
Dutch Blue Cottons	1.35	@ 1.40
French Blue Linens	1.80	@ 1.90
German Blue Linens	1.70	@ 1.80
German Blue Cottons	1.20	@ 1.25
Checks and Blues	1.25	@ 1.30
Lindsay Garments	.75	@ .80
Dark Cottons	.70	@ .75
Old Shopperies	.55	@ .60
New Shopperies	.60	@ .65
French Blues	1.25	@ 1.30

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.00	@ 1.10
Domestic	1.15	@ 1.25
Wool Tares, light	.80	@ .85
Wool Tares, heavy	.80	@ .85
Bright Bagging	.75	@ .80
Small Mixed Rope	.80	@ .90
Manila Rope—		
Foreign	1.50	@ 1.60
Domestic	1.50	@ 1.75
New Burlap Cut	1.65	@ 1.75
Hessian Jute Threads—		
Foreign	2.60	@ 2.75
Domestic	2.80	@ 3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	1.60	@ 1.70
Ordinary Hard White No. 1	1.30	@ 1.40
Hard White No. 2	1.25	@ 1.30
Soft White No. 1	1.25	@ 1.35
Flat Stock—		
Stitchless	.50	@ .60
Overissue Mag	.50	@ .60
Solid Flat Book	.45	@ .50
Crumpled No. 1	.35	@ .40
Solid Book Ledger	1.50	@ 1.75
Ledger Stock	.45	@ .55
New B. B. Chips	.20	@ .25
Manilas—		
New Env. Cut	1.25	@ 1.35
New Cuttings	1.00	@ 1.05
Extra No. 1 old	.80	@ .90
Print	.35	@ .40
Bogus Wrapper	.30	@ .35
Container	.25	@ .30
Old Kraft Machine—		
Compressed bales	.60	@ .70
News—		
No. 1 White News	1.15	@ 1.20
Strictly Overissue	.35	@ .40
Strictly Folded	.23	@ .28
No. 1 Mixed Paper	.15	@ .20

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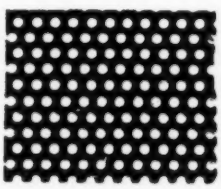

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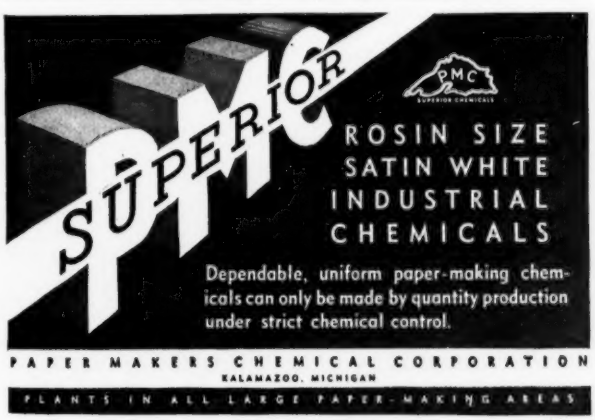

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Twines
(F. o. b. Mill)

Cotton—			
B. C., 18 basis	.30	@	.32
No. 1	.20	@	.22
No. 2	.19	@	.20
No. 3	.17	@	.18
A. Italian, 18 basis	.36	@	.37
Finisned Jute—			
Dark, 18 basis	.18	@	.20
Light, 18 basis	.20	@	.22
Jute Wrapping, 3-6 Ply—			
No. 1	.15½	@	.16½
No. 2	.11¾	@	.12¾
Tube Rope—			
4-ply and larger	.09¾	@	.11¾
Fine Tube Rope—			
4-ply	.11	@	—
3-ply	.12	@	—
2-ply	.13	@	—
Paper Makers Twine			
Balls	.08¾	@	.10¾
Box Twine, 2-3 ply	.07	@	.08
Jute Rope	.09	@	.10
Amer. Hemp, 6	.27	@	.29
Java Sisal—			
No. 1 Basis	.10	@	—
No. 2 Basis	.09	@	—
New Zealand Sisal	.10	@	—
Sisal Lath Yarn—			
No. 1	.12	@	.14
No. 2	.10	@	.12
Manila Twine	.23	@	.28

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¾
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.04	@	.11
Superfine Writing	.18	@	.24
No. 1 Fine Writing	.14	@	.18
No. 2 Fine Writing	.12	@	.14
No. 3 Fine Writing	.07	@	.18
No. 1 M. F. Book	.06½	@	.07¾
No. 2 M. F. Book	.05¼	@	.06¾
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	3.50	@	4.50
Southern Kraft	2.62½	@	—
No. 2 Kraft	2.62½	@	—
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03½
Manila Tissue	.07	@	.07½
White Tissue	.07¼	@	.07½

(Delivered Central Territory)

News, per ton—			
Rolls, contract	53.00	@	—
Sheets	58.00	@	—
Boards, per ton—			
Plain Chip	30.00	@	35.00
Solid News	32.50	@	37.50
Manila Lined Chip	40.00	@	45.00
Container Lined—			
85 Test	50.00	@	55.00
100 Test	55.00	@	60.00

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope cuttings	1.50	@	1.55
No. 1 Hard White	1.40	@	1.45
No. 1 Soft White	1.00	@	1.10
Ledger & Writings	.45	@	.55
Solid Books	.25	@	.30
Blanks	1.00	@	1.05
Krafts	.70	@	.80
New Kraft Cuts	1.15	@	1.25
Manila Env. Cuts	1.25	@	1.30
Ex. No 1 Manila	.90	@	1.00
Print Manila	.30	@	.35
Overissue News	.30	@	.35
Old Newspapers—			
No. 1	.25	@	.30
Mixed Papers—			
No. 1	.15	@	.20
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.04	@	.40
Ledgers	.06	@	.40
Writings—			
Superfine	.10	@	.18
Extra Fine	.15	@	.26
Fine	.15	@	.26
Fine, No. 2	.10	@	.25
Fine No. 3	.05½	@	.18
Book, M. F.	.04¾	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.06	@	.16
Coated Lithograph	.06	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.06	@	.09
Manila Sul., No. 1	.03	@	.05
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.02¾
Common Bogus	.03	@	.04

(Delivered Philadelphia)

News Print Rolls	58.00	@	62.00
Straw Board	50.00	@	—
News Board	22.00	@	25.00
Chip Board	21.00	@	23.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	73.00	@	75.00
No. 2, per ton	62.00	@	65.00
Carload lots	60.00	@	65.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.03½	@	.04
New White, No. 2	.02½	@	.04
Light Silesias	.02½	@	.03
Silesias, No. 1	.03	@	.03½
Black Silesias, soft	.02½	@	.03
New Unbleached	.05	@	.05½
Washable, No. 1	.01	@	.01½
Blue Overall	.03	@	.03½
Cottons—According to grades—			
Washable, No. 2	.01	@	.02
New Blue	.01	@	.02
Fancy	.01½	@	—
New Black Soft	.02	@	.03
New Light Seconds	.01	@	.02
New Dark Seconds	1.50	@	1.75
Khaki Cuttings—			
No. 1 O.D.	.03	@	.03½
No. 2 Mixed	.02½	@	.03
Corduroy	.02	@	.02½
New Canvas	.03½	@	.04
New Black Mixed	.02½	@	.03

Domestic Rags (Old)

White No. 1—			
Repacked	2.50	@	3.00
Miscellaneous	1.75	@	2.00
M. G.	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	2.00	@	3.50
Rooing Stock—			
Foreign No. 1	.50	@	.75
Repacked	.70	@	.80

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.25	@	1.50
Domestic	1.50	@	—
Manila Rope	2.00	@	2.25
Sisal Rope	1.25	@	1.50
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	1.25	@	1.50
No. 2	.80	@	1.00
Wool Tares, heavy	2.75	@	—
Mixed Strings	1.15	@	1.25
No. 1 New Light Burlap	2.25	@	2.50
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	1.80	@	1.90
No. 2 Hard White	1.60	@	1.70
No. 1 Soft White	1.50	@	1.65
No. 2 Soft White	1.30	@	1.45
No. 1 Mixed	.40	@	.50
No. 2 Mixed	.35	@	.40
Solid Ledger Stock	1.00	@	1.10
Writing Paper	.80	@	.90
No. 1 Books, heavy	.55	@	—
No. 2 Books, light	.40	@	—
No. 1 New Manila	1.00	@	1.15
No. 1 Old Manila	.90	@	1.00
Print Manila	.40	@	—
Container Manila	.40	@	.45
Old Kraft	.85	@	.95
Common Paper	.15	@	.20
No. 1 Mixed Paper	.20	@	.25
Straw Board, Chip	.25	@	.35
Binders Board, Chip	.25	@	.35
Corrugated Board	.30	@	.35
Overissue News	.35	@	.40
Old Newspaper	.20	@	.25

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.06	@	.12½
Rag Content	.12	@	.30
All Rag	.36	@	.52½
Bonds—			
Sulphite	.05½	@	.11¾
Rag Content	.12	@	.30
All Rag	.36	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¼	@	.06¼
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05½
No. 2 Kraft	—	@	.02½

(F. o. b. Boston)

Southern Kraft	—	@	.02½

(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)

Common Bogus	.02	@	.02¾

(Delivered New England points)

News Print, rolls	—	@	52.50
Straw Board, rolls	.009	@	35.00
Straw Board in Sheets, basis 35s to 70s	—	@	40.00
Filled News Board	25.00	@	30.00
Chip Board	—	@	25.00
Chip Board (Creasing)	25.00	@	27.50
Single Manila Lined Chip	—	@	35.00
Single White, Patent Coated News Board—Binder	45.00	@	55.00
Wood Pulp Board	70.00	@	75.00
Binder Boards	62.00	@	75.00

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Soft White	—	@	1.50
No. 1 Old Manila	.65	@	.75
No. 2 Mixed	.50	@	.55
No. 1 Mixed	.75	@	.85
Solid Ledger Books	1.20	@	1.40
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.60	@	.70
No. 1 Books, heavy	.50	@	.60
No. 1 Books, light	—	@	.30
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.25	@	1.30
No. 1 Old Manila	.55	@	.65
White Blank News	1.00	@	1.05
Kraft No. 1	.80	@	.90
Manila	.80	@	.90
No. 1 Mixed Papers	.12½	@	.15
Print Manila	.30	@	.40
Overissue News	.35	@	.45
Old Newspapers	.22½	@	—
Box Board, Chip	.17½	@	.20
Corrugated Boxes	.17½	@	.22½
Screening Wrappers	.25	@	.32½

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.10	@	—
Domestic	.80	@	.90
Manila Rope—			
Foreign	1.40	@	1.50
Domestic	—	@	1.60
Transmission Rope	1.00	@	—
Mixing String	—	@	.30
Jute Rope	—	@	.75
Jute Carpet Threads	.25	@	.30
Bleachery Burlap	1.75	@	2.00
Scrap Burlap	.60	@	1.00
No. 1 Scrap Burlap	.80	@	.90
Scrap Sisal	.75	@	.85
Scrap Sisal for shredding	.90	@	1.00
Wool Tares, heavy	.65	@	.75
New Burlap Cutting	.75	@	.90
Australian Wool Pouches	—	@	1.50
Heavy Baling Bagging	.90	@	1.10
Paper Mill Bagging	.50	@	.60
Bagging No. 2	.20	@	.25
No. 1 Burlap	1.80	@	2.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	—	@	.01½
New White No. 1	.03¾	@	.04
New White No. 2	.02¾	@	.03¼
Silesias No. 1	—	@	.03
New Black Silesias	.02½	@	.02¾
New Unbleached	.05	@	.05¼
Fancy	—	@	.02½
Washable	—	@	.01¾
Cottons—According to grades—			
Blue Overalls	—	@	.03¾
New Black, soft	.04	@	.04½
Khaki Cuttings	.03	@	.03½
O. D. Khaki	.03½	@	.03¾
Corduroy	.02¾	@	.03
New Canvas	—	@	.05
B.V.D. Cuttings	.04	@	.04¼

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	3.00	@	3.50
Miscellaneous	2.00	@	2.25
White No. 2—			
Repacked	.02¼	@	.02½
Miscellaneous	.02	@	.02¼
Twos and Blues	.90	@	1.00
Thirds and Blues—			
Repacked	.75	@	.85
Miscellaneous	.70	@	.75
Black Stockings	2.00	@	2.25
Roofing Stock—			
No. 1	.32½	@	.37½
No. 2	.30	@	.35
No. 3	.25	@	.30

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.40	@	.50
New No. 1 White Shirt Cuttings	3.75	@	4.00
Dutch Blues	1.25	@	1.50
New Checks & Blues	2.25	@	2.50
Old Fustians	—	@	.75
Old Linsey Garments	.55	@	.65

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.10¼	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.10¾	@	
No. 2 Colored	.09	@	.10½
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (Carloads)	6.65	@	—
No. 3 M. F. (Carloads)	6.20	@	—
No. 1 S. C. (carloads)	7.15	@	—
No. 3 S. C. (carloads)	6.65	@	—
No. 4 S. C. (carloads)	5.70	@	—
No. 1 Coated and Litho	12.50	@	—
No. 2 Coated and Litho	11.50	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.00	@	—
Wrapping—			
Rag Brown	4.40	@	—
White Wrap	3.00	@	—
"B" Manila	4.90	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.75	@	—
Kraft No. 2	5.40	@	—

(Delivered Toronto)

News, per ton—			
Rolls (contract)	52.50	@	53.00
Sheets	57.50	@	—

Pulp
(F. o. b. Mill)

Ground Wood	18.00	@	20.00
Sulphite easy bleaching	40.00	@	—
Sulphite, news grade	38.00	@	—
Sulphite, bleached	48.00	@	58.00
Sulphate	55.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	1.80	@	—
Soft White	1.40	@	—
White Blk. News	1.25	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	—
Light and Crumpled Book Stock	.80	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut	1.25	@	—
Printed Manilas	.55	@	—
Kraft	1.75	@	—
News and Scrap—			
Strictly Overissue	.50	@	—
Strictly Folded	.50	@	—
No. 1 Mixed Paper	.40	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09½	@	.10
Fancy Shirt Cuttings	.06	@	.06¾

SMOOTH COLOR

★

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TABLE OF CONTENTS

Copyright, 1932, by the Lockwood Trade Journal Co., Inc.

Fox River Valley Mills Speed Outlook..... 11
Paper Chemistry Institute Resumes..... 11
Abitibi Power & Paper in Receivership..... 12
Port Royal Plans Increased Output..... 12
Canada's Wood Pulp Production 12
Chicago Paper Market Unchanged..... 13
Mid West Salesmen's Activities..... 13
Charge Dumping of Wrapping Paper..... 13
Pennsylvania Mills Expand Production..... 14
A. Chamberlain Talks to Paper Group..... 14
Form Reconstruction Group 14
A. M. Collins Adds New Covers..... 14
Netherlands Paper Production Low..... 16
Geo. W. Sisson, Jr., Gets Appointment..... 16
Claremont Paper Co. Changes 16
I. P. Starts Mill at Turners Falls..... 16
Beauharnois to Start Power Delivery..... 18
Newfoundland's News Print Developments 18
New York Trade Jottings 20
Editorial 22
Union Bag Increases Schedules 23
Bids and Awards for Government Paper..... 23
Knowlton Bros. Report Improvement..... 23
News Print Rates not Unreasonable..... 23
Technical Section
Pulp and Paper Industry Literature Review 25
Colorimetric Determination of pH of Solutions Containing Chlorine or Hypochlorites and the Stability of the Indiators..... 28
Drying of Paper and Pulp 31
New Book on Research 36
Holyoke Reports Improvements..... 36
Tarentum Mills Complete Changes..... 36
Construction News 37
What Is Happening to Business Administration and Business Organization..... 38
Imports of Paper and Paper Stock..... 42
New York Market Review..... 46
Miscellaneous Markets 48
Market Quotations 48

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Want and For Sale Advertisements, 51-52

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